

In other words, the description is from the USGS site.

*Cushing, Oklahoma	99	87	29	7	3	1
*Langston, Oklahoma	96	91	34	7	2	0
*Crescent, Oklahoma	83	83	37	12	4	1
*Pawnee, Oklahoma	81	74	30	2	0	0
*Stillwater, Oklahoma	80	54	16	2	0	0
*Alva, Oklahoma	47	47	14	0	0	0
*Enid, Oklahoma	40	38	9	3	0	0
*Tonkawa, Oklahoma	38	38	7	0	0	0
*Fairview, Oklahoma	37	37	12	4	2	0
*Perkins, Oklahoma	27	23	7	0	0	0
*Luther, Oklahoma	26	24	8	0	0	0
*Waukomis, Oklahoma	20	20	8	1	0	0
*Spencer, Oklahoma	16	10	4	1	0	0
*McCord, Oklahoma	15	15	5	0	0	0
*Chandler, Oklahoma	13	13	7	5	0	0
*Yale, Oklahoma	13	13	2	0	0	0
*Jones, Oklahoma	9	9	2	0	0	0
*Prague, Oklahoma	9	9	2	0	0	0
*McCloud, Oklahoma	8	8	2	1	0	0
*Boley, Oklahoma	7	7	1	0	0	0
*Choctaw, Oklahoma	7	6	2	0	0	0
*Harrah, Oklahoma	7	4	1	0	0	0
*Blackwell, Oklahoma	5	4	1	0	0	0
*Meeker, Oklahoma	5	5	1	0	0	0
*Taloga, Oklahoma	4	4	0	0	0	0
*Blanchard, Oklahoma	3	3	1	0	0	0
*Healdton, Oklahoma	3	3	0	0	0	0
*Minco, Oklahoma	3	3	0	0	0	0
*Okeene, Oklahoma	3	3	2	0	0	0
*Drumright, Oklahoma	2	2	0	0	0	0
*Hennessey, Oklahoma	2	2	0	0	0	0
*Okarche, Oklahoma	2	2	0	0	0	0
*Stroud, Oklahoma	2	2	2	0	0	0
*Kingfisher, Oklahoma	1	1	0	0	0	0
*Lindsay, Oklahoma	1	1	1	0	0	0
*Marietta, Oklahoma	1	1	0	0	0	0
*Owasso, Oklahoma	1	0	0	0	0	0
*Rush Springs, Oklahoma	1	1	0	0	0	0
*Seminole, Oklahoma	1	1	1	0	0	0
*Skiatook, Oklahoma	1	1	0	0	0	0
*Watonga, Oklahoma	1	1	0	0	0	0

Dorsey, Nancy

From: Matt Skinner <M.Skinner@occeemail.com>
Sent: Tuesday, December 29, 2015 6:54 AM
To: Tim Rhodes; Bob Anthony; Dana Murphy; Jackie Hollinhead; Jordan Spencer; Joseph Briley; Joyce Boyd; Nicole King; Teryl Williams; Todd Hiatt
Cc: Tim Baker; Charles Lord; Jim Marlatt
Subject: earthquakes

As is probably the case for you, I have been flooded with phone calls largely because of the earthquake activity in the Edmond area (although people in Perry have been calling as well). Here is what is being reported as of now:

3.4 – Edmond, 5:49 am
4.3 – Edmond, 5:39 am
3.4 – Perry, Monday 10:21 am
3.5 – Perry, Monday 9:52 am
3.5 – Edmond, Sunday 9:59 pm

We also had 2 quakes in the Edmond/Jones area on Saturday.

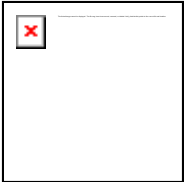
Dorsey, Nancy

From: Charles Lord <C.Lord@occemail.com>
Sent: Wednesday, December 16, 2015 1:06 PM
To: Dorsey, Nancy
Attachments: removed.txt

http://faculty-staff.ou.edu/M/Kyle.E.Murray-1/OK_SWDs/index.html#7/36.404/-100.283

We don't have this.

Charles Lord
Senior Hydrologist
Oklahoma Corporation Commission
Post Office Box 52000
Oklahoma City, Oklahoma 73152
(405)522-2751
c.lord@occemail.com



Dorsey, Nancy

From: Dorsey, Nancy
Sent: Thursday, December 10, 2015 8:44 AM
To: 'Matt Skinner'
Subject: RE: From EnergyWire -- EARTHQUAKES: Former Okla. seismologist confirms pressure, conflicts of interest in TV interview

At the meeting Monday afternoon, Charles said someone made that comment to him. No one in the room thought folks would want those jobs or the one down here.

From: Matt Skinner [mailto:M.Skinner@occeemail.com]
Sent: Thursday, December 10, 2015 8:42 AM
To: Dorsey, Nancy
Subject: RE: From EnergyWire -- EARTHQUAKES: Former Okla. seismologist confirms pressure, conflicts of interest in TV interview

No one here thought that.

From: Dorsey, Nancy [mailto:Dorsey.Nancy@epa.gov]
Sent: Thursday, December 10, 2015 8:27 AM
To: Matt Skinner; Charles Lord; Tim Baker; Patricia Downey
Cc: James Phelps; Jim Marlatt; Laura Erichsen
Subject: FW: From EnergyWire -- EARTHQUAKES: Former Okla. seismologist confirms pressure, conflicts of interest in TV interview

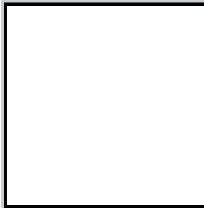
And someone thought seismologists would be flocking for those OGS positions?

From: Bates, William
Sent: Wednesday, December 09, 2015 8:42 AM
To: Dorsey, Nancy; Dellinger, Philip
Subject: FW: From EnergyWire -- EARTHQUAKES: Former Okla. seismologist confirms pressure, conflicts of interest in TV interview

Did you all see this?

William J. L. Bates
Geologist
U.S. EPA
Office of Ground Water & Drinking Water: Prevention Branch
202-564-6165

From: branby.jill [mailto:email_this@eenews.net]
Sent: Wednesday, December 09, 2015 9:34 AM
To: Bates, William <bates.william@epa.gov>; Kobelski, Bruce <Kobelski.Bruce@epa.gov>; Carey, Kyle <Carey.Kyle@epa.gov>; Jollie, Jeff <Jollie.Jeff@epa.gov>
Subject: From EnergyWire -- EARTHQUAKES: Former Okla. seismologist confirms pressure, conflicts of interest in TV interview



AN E&E PUBLISHING SERVICE

EARTHQUAKES:

Former Okla. seismologist confirms pressure, conflicts of interest in TV interview

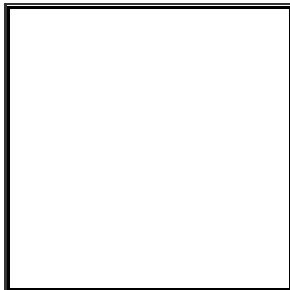
Mike Soraghan, E&E reporter

Published: Wednesday, December 9, 2015

In a soon-to-be-televised interview, former Oklahoma state seismologist Austin Holland confirmed industry pressure and conflicts of interest by state officials handling the swarms of quakes that have rattled the state.

Talking with Al-Jazeera last summer on his last day working for the Oklahoma Geological Survey (OGS), Holland gave some of his most expansive comments about the difficulties involved in linking earthquakes to the state's most powerful industry.

The interview is part of a story on Oklahoma's man-made earthquake swarms for the network's "Fault Lines" newsmagazine airing Sunday evening at 9 EST.



Former OGS seismologist Austin Holland in a TV interview confirmed industry pressure and conflicts of interest by state officials handling the swarms of quakes. Photo courtesy of Austin Holland.

In the interview, Holland said oil titan Harold Hamm told him to "watch how you say things" in a now-notorious "coffee" meeting in the office of University of Oklahoma President David Boren. He also said a position paper released in 2014, deeming the earthquakes to be natural, contradicted OGS's scientific understanding.

"This was to slow things down, to give the deniers more time to deny," Holland said. OGS is part of the university, which at the time was seeking a \$25 million donation from Hamm for a new building ([*EnergyWire*](#), June 23).

Holland also talked about the resources the state has put toward figuring out what is causing the

earthquakes.

"I spoke to a homeowner in Oklahoma, and he said, 'You know, I think the amount of resources you're getting is a clear conspiracy to keep you from doing the work you need to do,'" Holland recalled. "I don't have any way to refute that."

Holland was at the center of the state's earthquake debate for most of the time he worked at the Oklahoma Geological Survey, which is housed at the University of Oklahoma. Scientists generally date the uptick in quakes to 2009, before Holland started working there in 2010.

OGS lagged behind federal and academic scientists in finding that the swarms of quakes were related to wastewater disposal from oil and gas operations. Holland said it was clear to him and others at OGS by 2013, but OGS didn't formally acknowledge it until April of this year ([EnergyWire](#), April 20).

"Fault Lines" correspondent Josh Rushing said he and his crew spent hours with Holland on his last day as he packed up boxes in his small basement office on the OU campus. Holland seemed "beleaguered," he said, after years of dealing with the earthquake swarms with little support.

"He was giving his whole life to this, and no one appreciated it," Rushing said.

Rushing asked Holland if it was appropriate for Hamm, founder and CEO of Continental Resources Inc., to tell him to mind his words. The meeting in Boren's office was first reported by *EnergyWire* in March ([EnergyWire](#), March 3).

"Well, there are a lot of people that were telling me I need to be careful how I say things," Holland said.

Hamm has said he wasn't trying to bully Holland but simply to learn what proof he had ([EnergyWire](#), May 11).

Holland seemed more concerned about the 2014 statement, which was drafted at the suggestion of Larry Grillot, a university dean who oversaw OGS. Grillot was helping solicit the \$25 million contribution from Hamm and also served on the board of Pioneer Natural Resources Co. ([EnergyWire](#), June 23). Pioneer owns coalbed methane wells in a part of Colorado where federal scientists say oil and gas activities are causing earthquakes. He's been paid at least \$600,000 by Pioneer since 2013.

"The dean of the college that directly oversees the OGS being a board member on an energy company," Holland said. "I see that as probably a clear conflict of interest."

Rushing reached Grillot by phone, and he declined to comment.

Scientists say the unprecedented swarms of man-made quakes in the state since 2009 can be attributed to favorably aligned faults and production methods that create uniquely large volumes of wastewater. This year, Oklahoma has had more than 800 quakes of magnitude 3 or greater, a substantial increase over the 585 in 2014.

Oklahoma officials say producers from CBS's "60 Minutes" newsmagazine have also been preparing a story on the state's earthquake situation.

Rushing tracked down Gov. Mary Fallin (R), who told him the state waited to acknowledge the cause of the quake swarms. "We wanted to wait and have scientific information based on facts," she said, "not just on hearsay." Documents obtained by *EnergyWire* show Fallin and her staff moved slowly on the earthquake issue even as the state was rattled more and more frequently ([*EnergyWire*](#), July 8).

Rushing also talked to activists, experts, rattled residents, state officials and industry representatives. Kim Hatfield of the Oklahoma Independent Petroleum Association acknowledged that industry activity is linked to the quakes.

But Hatfield said smaller quakes, such as those that register around magnitude 3, are less of a concern than larger ones.

"Having a 3 is kind of a 'So what,'" Hatfield told Rushing. "If I was sure there was never going to be anything bigger than a 3 that wasn't naturally occurring, my blood pressure would probably go down a lot."

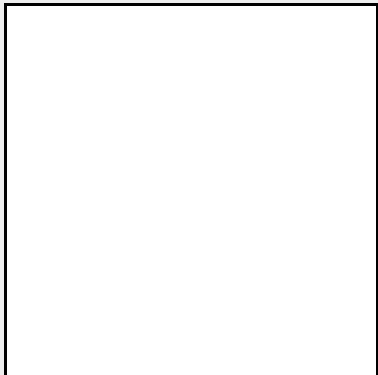
[Click here](#), [here](#) and [here](#) to see documents cited in the Al-Jazeera report.

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Dorsey, Nancy

From: Matt Skinner <M.Skinner@occemail.com>
Sent: Friday, December 04, 2015 2:01 PM
To: Dorsey, Nancy
Subject: RE: volumes
Attachments: KYLE MURRAY GRAPH.doc

See attached.

From: Dorsey, Nancy [mailto:Dorsey.Nancy@epa.gov]
Sent: Friday, December 04, 2015 1:56 PM
To: Matt Skinner
Subject: RE: volumes

There is a big blank between Kyle's last e-mail and Sarah's. It was stripped by our firewall.

From: Matt Skinner [mailto:M.Skinner@occemail.com]
Sent: Friday, December 04, 2015 1:54 PM
To: Dorsey, Nancy
Subject: RE: volumes

Not sure what you mean by "image from the journal." Whatever it is, I can probably get it so you can see it – just not sure what you're referring to.

From: Dorsey, Nancy [mailto:Dorsey.Nancy@epa.gov]
Sent: Friday, December 04, 2015 1:51 PM
To: Matt Skinner
Subject: RE: volumes

Thank you, I was wondering if I got dropped off your list! ☺

The image from the journal didn't come through, and a log-in is required so all I saw was the cover picture. I will be up there with my boss and supervisor for my EOY review and discussions on RBDMS. Monday afternoon with OCC folks, Tuesday morning with OCC and GWPC. Fingers crossed that it works well.

From: Matt Skinner [mailto:M.Skinner@occemail.com]
Sent: Friday, December 04, 2015 1:22 PM
To: Dorsey, Nancy
Subject: FW: volumes

FYI – release is attached (sorry, meant to send it to you yesterday) and also for your dining and dancing pleasure, see below.

From: Matt Skinner
Sent: Friday, December 04, 2015 1:20 PM
To: 'Sarah Terry-Cobo'
Subject: RE: volumes

As he said, he's going by the 1002a's he has for 2014, and he doesn't have all of them. Don't know if that's the reason, but it could be. Or it could be that all the assurances I've received that the RBDMS duplicative issues have been fixed is wrong. No way of knowing right now. Quite frankly, I would go with Kyle's right now, because they are based on individual reports, not a database that has a history of problems.

From: Sarah Terry-Cobo [<mailto:Sarah.Terry-Cobo@journalrecord.com>]

Sent: Friday, December 04, 2015 12:23 PM

To: Matt Skinner

Subject: RE: volumes

Great, thank you. Now I got info back from Kyle, and it looks different than what Jim sent. Can you help explain the discrepancy?

His info is below.

Thanks!
STC

Sarah,

The total SWD volume in 2013 was 1.326 billion, and in 2014 was 1.537 billion. The attached chart shows some breakdown of SWD volumes over time.

The volume that I reported in my OF1-2014 for 2013 was smaller because additional annual fluid injection reports (1002As) were made available online and added to my database. Therefore, the same situation could occur...as more 1002As are available for 2014...the total could go up. I don't anticipate much of a change as the database appears to be fairly complete.

Regards,

Kyle E. Murray, PhD

Hydrogeologist, Oklahoma Geological Survey

Kyle.Murray@ou.edu | Direct: +1-405-325-7502



Sarah Terry-Cobo

Energy, Health Care Reporter

The Journal Record

(405) 278-2849

<http://journalrecord.com>



From: Matt Skinner [<mailto:M.Skinner@occemail.com>]

Sent: Friday, December 04, 2015 10:57 AM

To: Sarah Terry-Cobo

Subject: RE: volumes

Yes. Note: That's all formations.

From: Sarah Terry-Cobo [<mailto:Sarah.Terry-Cobo@journalrecord.com>]

Sent: Friday, December 04, 2015 10:27 AM

To: Matt Skinner

Subject: RE: volumes

Wow, that was fast! Wonderful, thank you!

To clarify: 2637612230 means 2,637,612,230 barrels, or 2.6 billion bbls?

Just making sure I have the units correct.

STC

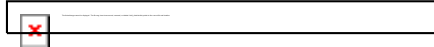
Sarah Terry-Cobo

Energy, Health Care Reporter

The Journal Record

(405) 278-2849

<http://journalrecord.com>



From: Matt Skinner [<mailto:M.Skinner@occemail.com>]

Sent: Friday, December 04, 2015 10:08 AM

To: Sarah Terry-Cobo

Subject: FW: volumes

Total disposed volume, 2014.

From: Jim Marlatt

Sent: Friday, December 04, 2015 10:07 AM

To: Matt Skinner

Subject: RE: volumes

FormationName	(All)
---------------	-------

Row Labels	Sum of Volume
ALFALFA	296168793.9
BEAVER	21551957
BECKHAM	9899408
BLAINE	7297119
BRYAN	379152
CADDO	20659511
CANADIAN	20868473
CARTER	375577225.5
CIMARRON	3368583
CLEVELAND	2117286
COAL	6423692.7
COMANCHE	614087
COTTON	6836503
CRAIG	144136
CREEK	160990874.7
CUSTER	3900099
DEWEY	46673303
ELLIS	14339142

GARFIELD	71655578.13
GARVIN	54566811
GRADY	27716770
GRANT	85753848.55
GREER	21120
HARMON	30965
HARPER	3228755
HASKELL	5045
HUGHES	16630127.6
JACKSON	1634651
JEFFERSON	5687087
KAY	74496388.5
KINGFISHER	17428438.56
KIOWA	167849
LATIMER	800813
LEFLORE	253169
LINCOLN	68402923.77
LOGAN	42672963.67
LOVE	4029020
MAJOR	10981143.77
MARSHALL	418709
MAYES	102836
MCCLAIN	5806558.6
MCINTOSH	1558445
MURRAY	23169394
MUSKOGEE	1433993
NOBLE	84028705.74
NOWATA	40061936
OKFUSKEE	18187955
OKLAHOMA	82977753.5
OKMULGEE	11906027.6
PAWNEE	35072795
PAYNE	90107071
PITTSBURG	4854225
PONTOTOC	164363784.1
POTTAWATOMIE	64089458
ROGER MILLS	9693100
ROGERS	1336155
SEMINOLE	147984473
STEPHENS	159065087.8
TEXAS	39388821.58
TILLMAN	1985853
TULSA	10383930.2
WAGONER	3453289
WASHINGTON	13997519
WASHITA	4267035.5
WOODS	122280684.5

WOODWARD	11663822
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Grand Total	2637612230
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Dorsey, Nancy

From: Jim Marlatt <J.Marlatt@occemail.com>
Sent: Thursday, December 03, 2015 8:12 AM
To: Dorsey, Nancy
Cc: Tim Baker; Charles Lord; Laura Erichsen
Subject: RE: draft of actions for verification - quick look

I have made a few notes below. The rest is correct, to the best of my knowledge, but Charles and Tim could better verify #1-4.

From: Dorsey, Nancy [mailto:Dorsey.Nancy@epa.gov]
Sent: Wednesday, December 02, 2015 3:47 PM
To: Jim Marlatt
Subject: draft of actions for verification - quick look

APPENDIX C **Oklahoma Corporation Commission** **Directives and Actions with respect to Seismicity**

The numerous OCC actions and directives taken in response to seismicity are available for public viewing on the State's new seismicity resource: Earthquakes in Oklahoma (<http://earthquakes.ok.gov/>). An outline of the major findings, actions and directives for 2015 up through November follows, (for complete details please refer to website). Appendix D lists all OGS events with a preferred magnitude greater than or equal to 4, since the start of FY2015 through the end of November, 2015.

1. 10/10/2014 Cushing Operational Restrictions
 - a. Events: 10/7 and 10/10 M4.2
 - b. Conversations with operators, one well shut-in (Wildehorse SWDW 1).
 - i. Plugged back out of granite on 10/16/14 and returned to disposal.
2. 1/30/2015 Extension of Traffic Light System
 - a. New permits in Area of Interest (AOI) require a court hearing and have a maximum 6 month term aka an Interim Order.
 - b. AOI defined as within 3 miles of a stressed or seismically active fault; or within 6 miles of a M4.
 - c. Annual MIT for high volume wells and increased disposal reporting (daily).
3. 3/18/2015 Redefined Yellow Traffic Light AOI for Arbuckle disposal wells
 - a. AOI defined as within 10 km of earthquake swarm center, (347 Arbuckle wells included).
 - b. Proof that disposal is within the Arbuckle (not deeper), **or** reduce disposal rate by half.
 - c. Compliance within 60 days, (April 18).
4. 4/21/2015 Launch of Earthquakes in Oklahoma and release of Oklahoma Geologic Survey findings on triggered seismicity.
5. 7/17/2015 Increased Yellow Traffic Light AOI
 - a. Area increased to 122 square miles, 558 Arbuckle wells included).
 - b. Reduced rate for below Arbuckle removed, wells to be shut-in or plugged back.

c. Compliance by August 14.

6. 7/28/2015 Crescent Area Operational Restrictions

a. Events: 7/27 M4.5 & 7/28 M4.1 in Logan Co.

b. Operator agreed action: Two wells shut-down and one well with 50% reduced volume

- i. One well (Hopfer SWD 1-20) was plugged back out of granite on 10/13 and brought back on at half volume; the second (Chambers 1-8 SWD) was allowed to come back on one month later (8/25) at a half volume.

7. 8/3/2015 Logan County Trend Reduced Volume Plan

a. Definition of a small (initial test area) in northern Oklahoma and southern Logan county that is very seismically active.

i. Ten M4-M4.3 events between 12/29/2013 and 6/20/2015.

ii. An eleventh M4 on 11/02/15 [Jim] one traffic light well shut in – the Lenora

b. Required operators to reduce disposal volumes by 38% below total 2012 level.

c. Compliance by October 8.

8. 8/27/2015 Revised 165:10-5-7 rules

a. Operator gives notice within 48 hours for initial Arbuckle disposal operations.

b. Record Arbuckle disposal operations daily for volumes, casing tubing annulus pressure and the surface injection pressure.

9. 9/18/2015 Cushing Area Operational Changes

a. Event: 9/18 M4.1

b. Proximity of increased earthquakes to tank farm, along with a M3.7 prompted actions.

i. The M4 was not posted until a month later on a revised catalog.

c. Conversations with operators, one well shut-in (Wilson 11-1 SWD), and one in granite (Louis 6-3 SWD) in and three others with reduced volumes.

i. Wilson still shut-in (question as to total depth), Louis plugged back on 10/5/15 and returned to operation.

10. 10/19/2015 Increased Cushing Operational Restrictions

a. Events: 9/25 M4.2 and 10/10 M4.3

i. In 2015: 73 events of M2.5 or greater within 3 miles

b. Arbuckle wells within 3 miles are shut-in. Three more shut-in (Calyx 35-2; Etheridge 25-3; Joyce A1-20 SWD)

i. One recompleted to Wilcox (?) [Jim] the Joyce is converting to a Wilcox well, others remain Shut-in.

c. Arbuckle wells between three and six miles reduce disposal volume by 25%.

d. Operators of Arbuckle wells between six and ten miles are on notice of potential changes if seismicity continues.

11. 11/10/2015 Medford Area Operational Restrictions

a. Events: 11/07 M4.1 and another 11/20

- i. In 2015: 21 events of M2.5 or greater within 3 miles
 - 1. 37 within 3 to 6 miles
 - 2. 314 between 6 and 12 miles
 - b. Arbuckle wells within 3 miles reduce disposal volume by 50%.
 - c. Arbuckle wells between three and six miles reduce disposal volume by 25%.
 - d. Operators of Arbuckle wells between six and ten miles are on notice of potential changes if seismicity continues.
 - e. One well (Thomas 1-27) required to shut-in until plug back into Arbuckle completed.
- 12. 11/16/2015 Fairview Area Operational Restrictions
 - a. Arbuckle wells within 3 miles – there are none.
 - b. Arbuckle wells between three and six miles reduce disposal volume by 25%.
 - c. Operators of Arbuckle wells between six and ten miles are on notice of potential changes if seismicity continues.
 - d. One well (Rich 1-32) required to shut-in until plug back into Arbuckle completed.
- 13. 11/19/2015 Cherokee-Carmen Area Operational Restrictions
 - a. Two Arbuckle wells (McDaniel SWD 1-18; Dutch Harbor SWD 1-14) within 3 miles are shut-in.
 - i. Dutch Harbor was plugged back on [Jim] 10/5/2015
 - b. Arbuckle wells between three and six miles reduce disposal volume by 50%.
 - c. Operators of Arbuckle wells between six and ten miles reduce disposal volume by 25%.
 - d. Operators of Arbuckle wells between ten and fifteen miles are on notice of potential changes if seismicity continues.
 - e. Net 40% volume reduction to be achieved.
- 14. ~12/01/2015 Byron Area Operation Restrictions [Jim] and area west of Medford
 - a. Events: M4.4 & 4.2 11/23 & 11/30, 10 mile buffers overlap [Jim] 4.2 was changed to a 4.5 by OGS yesterday
 - i. Earlier: 2/5 M4.2; 3/24 M4; 7/20 M4.4; 8/20 M4.1
 - b. Arbuckle wells within 3 miles are shut-in. [Jim] Byron 4 wells, Medford 3
 - c. Arbuckle wells between three and six miles reduce disposal volume by 50%.
 - d. Operators of Arbuckle wells between six and ten miles reduce disposal volume by 25%.
 - e. Operators of Arbuckle wells between ten and fifteen miles are on notice of potential changes if seismicity continues.

Nancy S. Dorsey
 Environmental Scientist
 Oklahoma Class II Program Manager
 WQ-SG EPA Region 6
 1445 Ross Ave. #1200
 Dallas, TX 75202-2733

214-665-2294
FAX 214-665-2191

Dorsey, Nancy

From: Dorsey, Nancy
Sent: Thursday, December 03, 2015 8:12 AM
To: 'Jim Marlatt'
Subject: RE: all directive well question

Oh well, there will always be some mysteries in life...many not worth pursuing further. ☺ Thanks!

From: Jim Marlatt [mailto:J.Marlatt@occmail.com]
Sent: Thursday, December 03, 2015 7:42 AM
To: Dorsey, Nancy
Subject: RE: all directive well question

This well was listed as not in granite based on a meeting in February. In late April or early May, a request for approval on a plugback plan was sent in and approved, and the tagging of the plug was witnessed on 5/14/15. I am not sure why the decision was made to plug it back.

From: Dorsey, Nancy [mailto:Dorsey.Nancy@epa.gov]
Sent: Wednesday, December 02, 2015 3:16 PM
To: Jim Marlatt
Subject: FW: all directive well question
Importance: High

Oops, sent it to the wrong Jim!

From: Dorsey, Nancy
Sent: Wednesday, December 02, 2015 1:43 PM
To: Jim Phelps
Subject: all directive well question
Importance: High

3500322761	MILA SWD 2610	1-28
------------	---------------	------

This says both that it isn't in basement, not in granite and that it was plugged back.

Which is correct please? ☺ database entry with multiple folks, etc. I edited the most recent version I could find so that date columns are actually dates.

N

ancy S. Dorsey
Environmental Scientist
Oklahoma Class II Program Manager
WQ-SG EPA Region 6
1445 Ross Ave. #1200
Dallas, TX 75202-2733
214-665-2294

FAX 214-665-2191

Dorsey, Nancy

From: Jim Marlatt <J.Marlatt@occeemail.com>
Sent: Thursday, December 03, 2015 7:42 AM
To: Dorsey, Nancy
Subject: RE: all directive well question

This well was listed as not in granite based on a meeting in February. In late April or early May, a request for approval on a plugback plan was sent in and approved, and the tagging of the plug was witnessed on 5/14/15. I am not sure why the decision was made to plug it back.

From: Dorsey, Nancy [mailto:Dorsey.Nancy@epa.gov]
Sent: Wednesday, December 02, 2015 3:16 PM
To: Jim Marlatt
Subject: FW: all directive well question
Importance: High

Oops, sent it to the wrong Jim!

From: Dorsey, Nancy
Sent: Wednesday, December 02, 2015 1:43 PM
To: Jim Phelps
Subject: all directive well question
Importance: High

3500322761	MILA SWD 2610	1-28
------------	---------------	------

This says both that it isn't in basement, not in granite and that it was plugged back.

Which is correct please? ☺ database entry with multiple folks, etc. I edited the most recent version I could find so that date columns are actually dates.

N

ancy S. Dorsey
Environmental Scientist
Oklahoma Class II Program Manager
WQ-SG EPA Region 6
1445 Ross Ave. #1200
Dallas, TX 75202-2733
214-665-2294
FAX 214-665-2191

Dorsey, Nancy

From: Dorsey, Nancy
Sent: Wednesday, December 02, 2015 1:43 PM
To: Jim Phelps
Subject: all directive well question
Attachments: All_Directive_Area_Of_Interest_Wells_edited.xlsx

Importance: High

3500322761	MILA SWD 2610	1-28
------------	---------------	------

This says both that it isn't in basement, not in granite and that it was plugged back.

Which is correct please? ☺ database entry with multiple folks, etc. I edited the most recent version I could find so that date columns are actually dates.

N

ancy S. Dorsey
Environmental Scientist
Oklahoma Class II Program Manager
WQ-SG EPA Region 6
1445 Ross Ave. #1200
Dallas, TX 75202-2733
214-665-2294
FAX 214-665-2191

Dorsey, Nancy

From: Tim Baker <T.Baker@occeemail.com>
Sent: Monday, November 30, 2015 10:55 AM
To: Dorsey, Nancy
Cc: Charles Lord
Subject: RE: OGS not tracking earthquakes in latest catalog report

Yes, we know, the OGS is well aware of the issue.

From: Dorsey, Nancy [mailto:Dorsey.Nancy@epa.gov]
Sent: Monday, November 30, 2015 9:52 AM
To: Tim Baker
Cc: Charles Lord; Patricia Downey; Matt Skinner; Dellinger, Philip; Brown, Jamesr
Subject: OGS not tracking earthquakes in latest catalog report

14 USGS listings for Oklahoma earthquakes from 11/26 on. USGS lists 2. There is a serious issue here!

Datetime	latitude	longitude	depth	mag	magType
2015-11-26T00:32:48.960Z	36.9106	-97.8055	2.4	3.2	mb_lg
2015-11-26T00:56:02.710Z	36.9124	-97.8043	4.41	3.5	mb_lg
2015-11-26T05:06:36.990Z	36.3224	-97.7379	5	3.1	mb_lg
2015-11-26T05:14:50.270Z	36.3065	-97.7469	5	3.1	mb_lg
2015-11-26T06:58:36.600Z	36.1802	-97.3519	3.18	2.5	mb_lg
2015-11-26T09:04:56.560Z	36.3819	-98.2818	5.38	2.8	mb_lg
2015-11-26T09:08:44.350Z	36.9443	-97.808	6.06	3	mb_lg
2015-11-26T23:47:40.850Z	36.2947	-97.6869	1.45	2.6	mb_lg
2015-11-27T00:06:47.230Z	36.8071	-97.7831	3.79	2.5	mb_lg
2015-11-27T01:12:58.470Z	36.2424	-97.4057	5	2.7	mb_lg
2015-11-27T21:57:49.660Z	36.2357	-97.4732	1.43	2.5	mb_lg
2015-11-28T01:56:24.330Z	36.4539	-98.7214	2.05	2.5	mb_lg
2015-11-28T13:51:07.450Z	36.2069	-97.4412	5	2.7	mb_lg
2015-11-29T10:17:43.850Z	36.5004	-98.9436	5.61	2.8	mb_lg

Nancy S. Dorsey
Environmental Scientist
Oklahoma Class II Program Manager
WQ-SG EPA Region 6
1445 Ross Ave. #1200
Dallas, TX 75202-2733
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Dorsey, Nancy

From: Matt Skinner <M.Skinner@occeemail.com>
Sent: Friday, November 20, 2015 3:37 PM
To: Dorsey, Nancy
Subject: FW: Status update

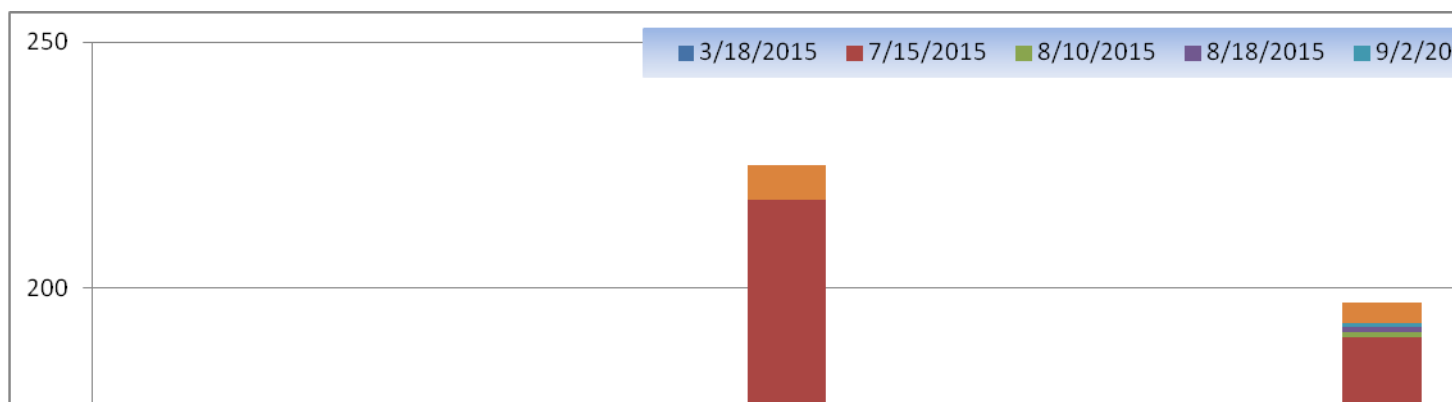
Just a reminder, this applies only to those wells covered by the plugback directives

From: Jim Marlatt
Sent: Friday, November 20, 2015 3:27 PM
To: Matt Skinner
Cc: Tim Baker; Charles Lord
Subject: Status update

As of 3 PM 11/20/15 the status of wells in the AOI is:

Company	(All)
County	(All)

Number of Wells	Date Added					
Current Status	3/18/2015	7/15/2015	8/10/2015	8/18/2015	9/2/2015	9/15/2015
Decreased injection by half	13	1				
Injecting	26	1				
Not Drilled	5	2				
Not in Granite	120	98				
Not injecting	34	7				
Plugback procedure approved	5	9				
Plugged Back	141	49	1	1		1
Shut in	13	4	1			
Volume Reporting - preparing documentation	4	9	5			
Plugged Back-Terminated	2	1				
Volume Reporting-no other action	2	23				
Grand Total	365	204	7	1		1



Thank you, and have a great day.

Jim Marlatt

Oil and Gas Specialist - Seismicity
Oklahoma Corporation Commission
2101 N. Lincoln Boulevard, Room 214
Oklahoma City, OK 73105
405.522.2758
j.marlatt@occemail.com



Dorsey, Nancy

From: Matt Skinner <M.Skinner@occeemail.com>
Sent: Friday, November 20, 2015 8:57 AM
To: Dorsey, Nancy
Subject: FW: Well listed in error
Attachments: removed.txt

FYI

From: Jim Marlatt
Sent: Friday, November 20, 2015 7:47 AM
To: Joe Craig; Galik, Shirley; Fonda Manwell
Cc: Charles Lord; Tim Baker; Matt Skinner
Subject: Well listed in error

Good morning,

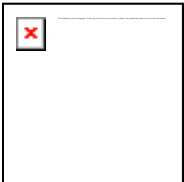
I realized this morning, when I was preparing to send out notification emails, that AEW was incorrectly listed as having a well in the zones around the M4.7. The well should have been the Chesapeake Clay 7-25-10, not the AEW Clay 21-1. I am making the necessary corrections and will be sending an updated list to Matt Skinner.

I apologize for the mix-up.

Thank you, and have a great day.

Jim Marlatt

Oil and Gas Specialist - Seismicity
Oklahoma Corporation Commission
2101 N. Lincoln Boulevard, Room 214
Oklahoma City, OK 73105
405.522.2758
j.marlatt@occeemail.com



Dorsey, Nancy

From: Matt Skinner <M.Skinner@occemail.com>
Sent: Thursday, November 19, 2015 5:27 PM
To: Dorsey, Nancy
Subject: FW: Crescent leter, Map table
Attachments: M4.0_Crescent 11-19-15_.docx; Crescent 4.0 11-19-15_map.pdf; CHEROKEE ADVISORY.pdf

See attached. Cherokee is final and released. Also attached is response I was given to draft from for Crescent. Note 6-10 mile. After I spoke to Charles by phone just now, volumes may be revised (including those in 6 – 10). He will revisit tomorrow. Advisory tonight for Crescent will deal only with shut-in's, with "volume cuts being planned."

Dorsey, Nancy

From: Dorsey, Nancy
Sent: Thursday, November 05, 2015 10:21 AM
To: Jim Marlatt
Cc: Charles Lord
Subject: FW: H Voise daily

There were a number of other e-mails, but ...

I do not recall going back and checking that this 'mess' got straightened out.

From: Dorsey, Nancy
Sent: Thursday, July 02, 2015 8:31 AM
To: Suzi Doyal
Subject: RE: H Voise daily

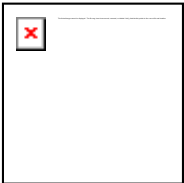
Sounds far better to have them take the time to make it right, but a bit concerning that it is by formula from a gauge readout.

From: Suzi Doyal [<mailto:S.Doyal@occcemail.com>]
Sent: Wednesday, July 01, 2015 3:33 PM
To: Lacy, Heather; Dorsey, Nancy
Cc: Baker, Brenda; Charles Lord
Subject: RE: H Voise daily

Heather,

As far as I am concerned, I agree and yes it is ok.

Suzi Doyal
Volume Reporting
Underground Injection Control
Oklahoma Corporation Commission
P.O. Box 52000
Oklahoma City, OK 73152
405-521-2278



From: Lacy, Heather [<mailto:Heather.Lacy@dvn.com>]
Sent: Wednesday, July 01, 2015 3:29 PM
To: Dorsey, Nancy

Cc: Suzi Doyal; Baker, Brenda; Charles Lord
Subject: RE: H Voise daily

We have found a bust in a formula on some of our data going back to April. (some pressures are showing much higher than reality) I would prefer to not send incorrect data today but it might be Monday before we are able to send the correct data. Will that be a problem?

Thanks,
Heather

From: Dorsey, Nancy [<mailto:Dorsey.Nancy@epa.gov>]
Sent: Friday, June 26, 2015 12:09 PM
To: Lacy, Heather
Cc: Suzi Doyal; Baker, Brenda; Charles Lord
Subject: RE: H Voise daily

Thank you!

From: Lacy, Heather [<mailto:Heather.Lacy@dnv.com>]
Sent: Friday, June 26, 2015 10:35 AM
To: Dorsey, Nancy
Cc: Suzi Doyal; Baker, Brenda; Charles Lord
Subject: RE: H Voise daily

It has been injecting and was listed the on the excel spreadsheets until they were switched. We had not gone through to make sure all of our wells were switched over but will do so now.

Thanks,
Heather

From: Dorsey, Nancy [<mailto:Dorsey.Nancy@epa.gov>]
Sent: Thursday, June 25, 2015 4:55 PM
To: Lacy, Heather
Cc: Suzi Doyal; Baker, Brenda; Charles Lord
Subject: H Voise daily

Has the H Voise 14-21N-1E really not been used since 4/20/15?

Nancy S. Dorsey
Environmental Scientist
Oklahoma Class II Program Manager
WQ-SG EPA Region 6
1445 Ross Ave. #1200
Dallas, TX 75202-2733
214-665-2294
FAX 214-665-2191

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notified that any review, retransmission, conversion to hard copy, copying, circulation or other use of all or any portion of this message and any attachments is strictly prohibited. If you are not the intended recipient, please notify the sender immediately by return e-mail, and delete this message and any attachments from your system.

Dorsey, Nancy

From: Dorsey, Nancy
Sent: Thursday, November 05, 2015 10:17 AM
To: Jim Marlatt
Subject: FW: another Devon error

From: Dorsey, Nancy
Sent: Wednesday, June 24, 2015 2:38 PM
To: Heather.Lacy@dvn.com
Cc: Suzi Doyal
Subject: RE: another Devon error

Hi Heather,

Yup, that week is all values not links, and the numbers are now different for the Voise and the Vargas. Thank you!

I did notice however that somewhere along the line text has been entered into the volume column for the Adkisson on 4/6 & 4/7. This effectively corrupts the spreadsheet calculations. Comments really need to stay in the comment column please.

There is also the issue of the volumes and pressures reported for the Harvey 1-11. I understand that only one well feeds it, but the volumes of saltwater provided do not match the volumes disposed. I suspect with so many wells one or two weeks were pasted into the wrong place.

The data for the week starting 3/16/15 is identical between the Hicks 1-21 and the Hopper 1-20.

Perhaps you could check with the operations engineers on the wells with negative 300 to 500 psi listed for the tubing pressure and see what they meant? No gauge will read that way, so my assumption is that the '-' in front needs to be deleted, especially as the rates are not significantly different from values with a similar positive tubing pressure.

Thanks for your help in clearing up the mysteries!

As a separate fyi, if you see a little triangle symbol in the top left of any cell in the data table, that means there is a formula problem. If you click in the cell directly above it, then double click the square in the lower right of the cell it will fix the issue. This creeps in if rows have been deleted from the table, usually in the last column. Excel can be very helpful, but other times ... not so much.

Nancy

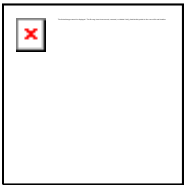
Nancy S. Dorsey
Environmental Scientist
Oklahoma Class II Program Manager
WQ-SG EPA Region 6
1445 Ross Ave. #1200
Dallas, TX 75202-2733
214-665-2294
FAX 214-665-2191

From: Suzi Doyal [<mailto:S.Doyal@occemail.com>]
Sent: Wednesday, June 24, 2015 1:38 PM
To: Dorsey, Nancy
Subject: FW: another Devon error

Since this was your questions. Can you answer back to them ? That way maybe it won't lose meaning with each email back and forth.

thanks

Suzi Doyal
Volume Reporting
Underground Injection Control
Oklahoma Corporation Commission
P.O. Box 52000
Oklahoma City, OK 73152
405-521-2278



From: Lacy, Heather [<mailto:Heather.Lacy@dvn.com>]
Sent: Wednesday, June 24, 2015 1:36 PM
To: Suzi Doyal
Cc: Baker, Brenda
Subject: RE: another Devon error

Those aren't showing up as the same on our end. At least on the newest form. Can you tell us where they are the same? I was looking at the May 18th date range.

Thanks,

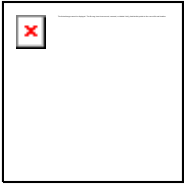
Heather

From: Suzi Doyal [<mailto:S.Doyal@occemail.com>]
Sent: Wednesday, June 24, 2015 12:50 PM
To: Lacy, Heather
Subject: FW: another Devon error

Here is one form this morning.

Suzi Doyal
Volume Reporting
Underground Injection Control
Oklahoma Corporation Commission

P.O. Box 52000
Oklahoma City, OK 73152
405-521-2278



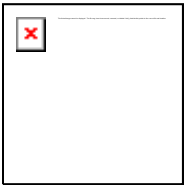
From: Suzi Doyal
Sent: Wednesday, June 24, 2015 11:45 AM
To: 'Baker, Brenda'
Subject: another Devon error

Brenda,

There is a questions on Vargas and Voise. Seems that the data is exactly the same. Is this correct?

Sorry to keep bothering you.

Suzi Doyal
Volume Reporting
Underground Injection Control
Oklahoma Corporation Commission
P.O. Box 52000
Oklahoma City, OK 73152
405-521-2278



From: Dorsey, Nancy [<mailto:Dorsey.Nancy@epa.gov>]
Sent: Wednesday, June 24, 2015 11:43 AM
To: Suzi Doyal; Charles Lord
Cc: Megan Crocker; Patricia Downey
Subject: Re: another Devon error

Thank you! But is that where the Vargas matches exactly the Voise?

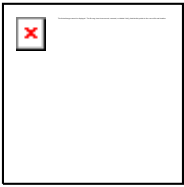
From: Suzi Doyal <S.Doyal@occemail.com>
Sent: Wednesday, June 24, 2015 11:36 AM
To: Dorsey, Nancy; Charles Lord
Cc: Megan Crocker; Patricia Downey
Subject: RE: another Devon error

The following issue with the Devon Volume reporting form has been corrected on the New Form ; today's report.

(the week starting 5/18, at least for the Vargas, was pasted as a linked file which goes to zero when 'updated'.)

Also Brenda has been notified of the 1012A issue.

Suzi Doyal
Volume Reporting
Underground Injection Control
Oklahoma Corporation Commission
P.O. Box 52000
Oklahoma City, OK 73152
405-521-2278



From: Dorsey, Nancy [<mailto:Dorsey.Nancy@epa.gov>]
Sent: Wednesday, June 24, 2015 8:09 AM
To: Suzi Doyal; Megan Crocker; Charles Lord
Subject: another Devon error

Also on Devon's Voise well, 3510324450, the February 2014 pressure on the 1012A is obviously missing a digit.

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Dorsey, Nancy

From: Dorsey, Nancy
Sent: Thursday, November 05, 2015 10:14 AM
To: Jim Marlatt
Subject: FW: Harvey 1-11 SWD
Attachments: Harvey 1-11 MH Production Query.xlsx

Importance: High

From: Charles Lord [<mailto:C.Lord@occemail.com>]
Sent: Tuesday, May 19, 2015 9:29 AM
To: Dorsey, Nancy
Cc: Suzi Doyal
Subject: FW: Harvey 1-11 SWD

Charles Lord
Senior Hydrologist
Oklahoma Corporation Commission
Post Office Box 52000
Oklahoma City, Oklahoma 73152
(405)522-2751
c.lord@occemail.com

From: Baker, Brenda [<mailto:Brenda.Baker@dvn.com>]
Sent: Monday, May 18, 2015 2:29 PM
To: Charles Lord
Cc: Lacy, Heather
Subject: Harvey 1-11 SWD

Charles!

Please find attached the water production volume for the Harvey 1-11 MH well, which is the only producer injecting into the Harvey 1-11 SWD well. Ops is checking the meter on the SWD well.

Thank you!

Brenda Baker
Devon Energy Production Co., L.P.
Sr. Regulatory Specialist
333 W. Sheridan Avenue, 18.412
Oklahoma City, OK 73102-5010
405/228-7598
Alt. Work Schedule "A"

Brenda.Baker@dyn.com



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Dorsey, Nancy

From: Dorsey, Nancy
Sent: Tuesday, November 03, 2015 12:48 PM
To: 'Laura Erichsen'
Subject: RE: Wells missing 1085

What I was really hoping for was the 1085's showing they were actually plugged back, with the depths.

From: Laura Erichsen [mailto:L.Erichsen@occeemail.com]
Sent: Tuesday, November 03, 2015 9:17 AM
To: Dorsey, Nancy
Subject: RE: Wells missing 1085

We only recorded "1002A" in the forms column of the spreadsheet if they mentioned plugbacks on the form. Do the wells you're talking about have that in the column? If so, which wells are they so I can double check them? If there's a problem we will have Betty QC them.

From: Dorsey, Nancy [mailto:Dorsey.Nancy@epa.gov]
Sent: Monday, November 02, 2015 3:22 PM
To: Laura Erichsen
Subject: RE: Wells missing 1085

Except that the first two I looked at, that I hadn't tracked do not mention plugbacks at all. At least not that I can access through the imaging system.

From: Laura Erichsen [mailto:L.Erichsen@occeemail.com]
Sent: Monday, November 02, 2015 1:26 PM
To: Dorsey, Nancy
Subject: RE: Wells missing 1085

I was finding them on the OCC imaging program. I only marked "1002A" in the second to last column if the form showed a plugging depth. I was not on the original email you sent, so I was just told to look for 1002A's for wells on the list you sent. I looked through about half of them before we got another contractor that does data entry, so I sent it off to her. Her name is Betty Clymer and she finished off the process. So at least we now have records of which ones have been plugged and documented with the plugging information.

I did come from the O&G industry, I used to be a mudlogger, which is where I met Jim, and most recently worked at Chesapeake as a hydrogeologist.

From: Dorsey, Nancy [mailto:Dorsey.Nancy@epa.gov]
Sent: Monday, November 02, 2015 1:10 PM
To: Laura Erichsen
Subject: RE: Wells missing 1085

Great, hope you do get an office soon!

Where were you finding the F1002A's and were you verifying if they mentioned plugbacks?

Looking at the notes, I am not sure you understood my system...not surprising, trying to see inside someone else's head is ify at best. The PF_Form entry should indicate what I based the TD_Fm and other depth picks (Bs Arbuckle, etc.) on. If it hasn't been plugged back there will not be a useful F1002A or 1085. It also doesn't mean, that you and Jim agree with my 'call'. It's a flag, if I suspect or note that it is in the Granite, Granite wash or Reagan. For Mudlog interpretation, I am sure that Jim's reading will beat mine any day. I haven't done much and it wasn't in Oklahoma.

Did you also come from the oil & gas industry?

From: Laura Erichsen [<mailto:L.Erichsen@occeemail.com>]
Sent: Monday, November 02, 2015 11:50 AM
To: Dorsey, Nancy
Subject: RE: Wells missing 1085

Thanks, Nancy!

I am going to be moving offices soon, hopefully today or tomorrow, and will have a phone then...hopefully ☺ I will send you the number when that happens.

From: Dorsey, Nancy [<mailto:Dorsey.Nancy@epa.gov>]
Sent: Monday, November 02, 2015 11:49 AM
To: Laura Erichsen
Subject: RE: Wells missing 1085

Hi Laura,

Welcome to the group!

No problem on sticking with the AOI, you have your hands more than full. I will go through what you sent me and thanks. Do you have a phone or are you office hopping?

Feel free to call me. ☺

Nancy

Nancy S. Dorsey
Environmental Scientist
Oklahoma Class II Program Manager
WQ-SG EPA Region 6
1445 Ross Ave. #1200
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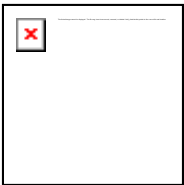
From: Laura Erichsen [<mailto:L.Erichsen@occeemail.com>]
Sent: Monday, November 02, 2015 11:30 AM
To: Dorsey, Nancy
Subject: Wells missing 1085

Hi Nancy,

My name is Laura Erichsen and I will be Megan Crocker's replacement, so I wanted to introduce myself to you. Also, you had sent an email last week with some questions about wells that were missing plug back information, but had listed a PBTD if I remember correctly. We went through the list you sent and looked for any wells with 1002A's that listed plugging depths so we have some record of plugs for those wells. Attached is the spreadsheet summarizing what we found. We didn't look at wells outside of the AOI for now, but can do that if necessary. We added the two columns on the right and saved copies of the 1002A's that were found. Let me know if you need anything else or have any questions. Thanks!

Thank you,

Laura Erichsen
Contract Geologist
Oklahoma Corporation Commission
Post Office Box 52000
Oklahoma City, Oklahoma 73152
l.erichsen@occcemail.com



Dorsey, Nancy

From: Dorsey, Nancy
Sent: Monday, November 02, 2015 3:22 PM
To: 'Laura Erichsen'
Subject: RE: Wells missing 1085

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I did come from the O&G industry, I used to be a mudlogger, which is where I met Jim, and most recently worked at Chesapeake as a hydrogeologist.

From: Dorsey, Nancy [mailto:Dorsey.Nancy@epa.gov]
Sent: Monday, November 02, 2015 1:10 PM
To: Laura Erichsen
Subject: RE: Wells missing 1085

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Did you also come from the oil & gas industry?

From: Laura Erichsen [mailto:L.Erichsen@occeemail.com]
Sent: Monday, November 02, 2015 11:50 AM
To: Dorsey, Nancy
Subject: RE: Wells missing 1085

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From: Dorsey, Nancy [<mailto:Dorsey.Nancy@epa.gov>]
Sent: Monday, November 02, 2015 11:49 AM
To: Laura Erichsen
Subject: RE: Wells missing 1085

Hi Laura,

Welcome to the group!

No problem on sticking with the AOI, you have your hands more than full. I will go through what you sent me and thanks. Do you have a phone or are you office hopping?

Feel free to call me. ☺

Nancy

Nancy S. Dorsey
Environmental Scientist
Oklahoma Class II Program Manager
WQ-SG EPA Region 6
1445 Ross Ave. #1200
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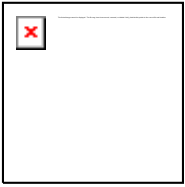
From: Laura Erichsen [<mailto:L.Erichsen@occemail.com>]
Sent: Monday, November 02, 2015 11:30 AM
To: Dorsey, Nancy
Subject: Wells missing 1085

Hi Nancy,

My name is Laura Erichsen and I will be Megan Crocker's replacement, so I wanted to introduce myself to you. Also, you had sent an email last week with some questions about wells that were missing plug back information, but had listed a PBTD if I remember correctly. We went through the list you sent and looked for any wells with 1002A's that listed plugging depths so we have some record of plugs for those wells. Attached is the spreadsheet summarizing what we found. We didn't look at wells outside of the AOI for now, but can do that if necessary. We added the two columns on the right and saved copies of the 1002A's that were found. Let me know if you need anything else or have any questions. Thanks!

Thank you,

Laura Erichsen
Contract Geologist
Oklahoma Corporation Commission
Post Office Box 52000
Oklahoma City, Oklahoma 73152
l.erichsen@occemail.com



Dorsey, Nancy

From: Dorsey, Nancy
Sent: Monday, November 02, 2015 1:10 PM
To: 'Laura Erichsen'
Subject: RE: Wells missing 1085

Great, hope you do get an office soon!

Where were you finding the F1002A's and were you verifying if they mentioned plugbacks?

Looking at the notes, I am not sure you understood my system...not surprising, trying to see inside someone else's head is ify at best. The PF_Form entry should indicate what I based the TD_Fm and other depth picks (Bs Arbuckle, etc.) on. If it hasn't been plugged back there will not be a useful F1002A or 1085. It also doesn't mean, that you and Jim agree with my 'call'. It's a flag, if I suspect or note that it is in the Granite, Granite wash or Reagan. For Mudlog interpretation, I am sure that Jim's reading will beat mine any day. I haven't done much and it wasn't in Oklahoma.

Did you also come from the oil & gas industry?

From: Laura Erichsen [mailto:L.Erichsen@occeemail.com]
Sent: Monday, November 02, 2015 11:50 AM
To: Dorsey, Nancy
Subject: RE: Wells missing 1085

Thanks, Nancy!

I am going to be moving offices soon, hopefully today or tomorrow, and will have a phone then...hopefully ☺ I will send you the number when that happens.

From: Dorsey, Nancy [mailto:Dorsey.Nancy@epa.gov]
Sent: Monday, November 02, 2015 11:49 AM
To: Laura Erichsen
Subject: RE: Wells missing 1085

Hi Laura,

Welcome to the group!

No problem on sticking with the AOI, you have your hands more than full. I will go through what you sent me and thanks. Do you have a phone or are you office hopping?

Feel free to call me. ☺

Nancy

Nancy S. Dorsey
Environmental Scientist
Oklahoma Class II Program Manager
WQ-SG EPA Region 6

1445 Ross Ave. #1200
Dallas, TX 75202-2733
214-665-2294
FAX 214-665-2191

From: Laura Erichsen [<mailto:L.Erichsen@occemail.com>]

Sent: Monday, November 02, 2015 11:30 AM

To: Dorsey, Nancy

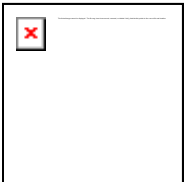
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Subject: Wells missing 1085

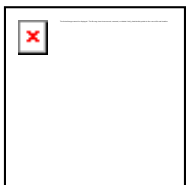
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Thank you,

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l.erichsen@occemail.com



Dorsey, Nancy

From: Tim Baker <T.Baker@occemail.com>
Sent: Monday, November 02, 2015 9:15 AM
To: Dorsey, Nancy
Subject: RE: KCC Seismic Monitoring and Injection Limitations in Harper and Sumner County, KS Extended by 180 Days

Thanks.

I have not seen the order, but I have been in conversation with Ryan.

From: Dorsey, Nancy [mailto:Dorsey.Nancy@epa.gov]
Sent: Monday, November 02, 2015 9:06 AM
To: Charles Lord; Tim Baker; Matt Skinner
Cc: Patricia Downey
Subject: FW: KCC Seismic Monitoring and Injection Limitations in Harper and Sumner County, KS Extended by 180 Days

In case you haven't seen it.

From: Hildebrandt, Kurt
Sent: Friday, October 30, 2015 11:14 AM
To: Mindrup, Mary; Dellinger, Philip
Cc: Garrett, David; Meissner, Benjamin; Kobelski, Bruce; Bates, William; Graves, Brian; Lawrence, Rob; Johnson, Ken-E; Dorsey, Nancy
Subject: KCC Seismic Monitoring and Injection Limitations in Harper and Sumner County, KS Extended by 180 Days

On October 29th, the Kansas Corporation Commission extended the both the monitoring period and the injection limitations within Harper and Sumner County, KS. The monitoring period was extended an additional 180 days after September 15, 2015 and the limitations of 25,000 barrels (~1,000,000 gallons) of saltwater per day for any well within those counties and 8,000 barrels (336,000 gallons) per day within the five areas of heightened seismic concern was also extended for that time period.

The additional monitoring period shall end on March 13, 2016, but the conditions in the Commission's Order shall not terminate on that date. KCC Staff have been directed to submit an additional report and recommendation back to the commission on if to extend the monitoring period further on or before March 13, 2016.

I've attached a copy of the new order to this email.

Dorsey, Nancy

From: Dorsey, Nancy
Sent: Monday, November 02, 2015 9:06 AM
To: Charles Lord; Tim Baker; Matt Skinner
Cc: Patricia Downey
Subject: FW: KCC Seismic Monitoring and Injection Limitations in Harper and Sumner County, KS Extended by 180 Days
Attachments: 15CONS770CMSC_OrderExtendingMonitoring.pdf

In case you haven't seen it.

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To: Mindrup, Mary; Dellinger, Philip
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From: Dorsey, Nancy
Sent: Monday, November 02, 2015 9:06 AM
To: Hildebrandt, Kurt
Subject: RE: KCC Seismic Monitoring and Injection Limitations in Harper and Sumner County, KS Extended by 180 Days

Thanks Kurt!

From: Hildebrandt, Kurt
Sent: Friday, October 30, 2015 11:14 AM
To: Mindrup, Mary; Dellinger, Philip
Cc: Garrett, David; Meissner, Benjamin; Kobelski, Bruce; Bates, William; Graves, Brian; Lawrence, Rob; Johnson, Ken-E; Dorsey, Nancy
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I've attached a copy of the new order to this email.

Dorsey, Nancy

From: Dorsey, Nancy
Sent: Monday, October 26, 2015 11:49 AM
To: Jim Marlatt; Megan Crocker (M.Crocker@occeemail.com); Charles Lord
Subject: more granite spreadsheet questions or comments
Attachments: qry_UIC_WELLS9SP_ARB+_1085.xlsx; qry_UIC_WELLS9SP_ARB NO 1085.xlsx

The spreadsheet says you received logs for the Lo Jo Whitehead Ross well, but I don't see any folder for this operator, or for this well under JB Oilfield the previous (?) operator. For that matter there is no completion report imaged either.

In case it may be useful, I have provided the below tidbits. ☺

I am still working through the folders, but I have covered everything from the *All Directive Area of Interest Wells* from last week, that said the well was plugged, plus all the major players and well into the minor.

NOTE: My list included any well that I have found a record for that says it is deeper or potentially deeper than the Arbuckle, regardless of location. So, my list will in fact contain wells you are not (yet) looking at. ☺ Obviously, you don't need to worry about those at this time.

I attached two versions all the wells that have 1085's and all those without, both only including wells I have formation TD information on. The exceptions are listed below, the first one in the Arbuckle that the operator plugged back immediately after drilling:

UIC_WELLS9SP											
OperName	Directiona	ALT_API	LONGITUDE	LATITUDE	TotalDepth	TD_Fm	PBTD	PB_date	PB_FORM	TVD	F100
MIDSTATES PETROLEUM COMPANY LLC	HOR: 9803 MD = 7840 TVD		- 97.0158680	35.6224120	9803	ARBUCKLE	6301.00	4/27/2015	1085	7840.06	26-D

UIC_WELLS9SP											
API	API_LONG	WellName	WellNum	OperNum	OperName	Directiona	ALT_API	LONGITUDE	LATITUDE	TotalDe	
3511723565	351172356500	WARREN	SWD 1	23529	TARKA ENERGY, LLC			- 96.7701900	36.3408300		

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Dorsey, Nancy

From: Dorsey, Nancy
Sent: Wednesday, October 21, 2015 3:26 PM
To: Jim Marlatt
Cc: Charles Lord
Subject: 'worthless' F1085

I have noticed several F1085 images in the various operator folders that (in my opinion) are worth less than the paper they could be printed on. All they basically state is that the well needs to be plugged back according to OCC directives.

The two most recent are in the Concorde Resource Corp Elogs_Mudlogs_Etc folders.

I suspect you are in agreement. ☺

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Dorsey, Nancy

From: Dorsey, Nancy
Sent: Tuesday, October 20, 2015 2:07 PM
To: Jim Marlatt; Megan Crocker (M.Crocker@occemail.com)
Cc: Charles Lord
Subject: Longfellow Energy J&J 7-1 SWD

It is 'interesting' that the Longfellow Energy J&J 7-1 SWD keeps quoting an original TD at 9170', when the F1002A states 10513'. The support logs they have supplied for their wells rarely reach to within 200' of the well's TD. Not particularly useful. Right down there with the mud mixing information supplied by Larry Sherman=not. But maybe I missed something?

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Dorsey, Nancy

From: Dorsey, Nancy
Sent: Friday, October 16, 2015 4:19 PM
To: Charles Lord; Patricia Downey
Cc: Jim Marlatt; Megan Crocker (M.Crocker@occeemail.com)
Subject: Status of CDW in Reagan and Basement?

What is the status on the two commercial disposal wells open to basement? The last report I saw indicated there were plugging procedures submitted, but were they acted on?

- 151-23739 Scribner 1 SWD (horizontal) with significant length in the Reagan with a TD in basement, per the mud log
- 151-121599 Circle SWD1

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Dorsey, Nancy

From: Dorsey, Nancy
Sent: Thursday, October 15, 2015 1:01 PM
To: 'Jim Marlatt'
Subject: RE: Sandridge Charly SWD 2407 - cont.

Thanks, I suspect it will be an interesting meeting! ☺

From: Jim Marlatt [mailto:J.Marlatt@occemail.com]
Sent: Thursday, October 15, 2015 12:53 PM
To: Dorsey, Nancy
Subject: RE: Sandridge Charly SWD 2407 - cont.

Hi, Nancy.

We have a technical meeting with Sandridge on the 22nd to discuss the Charly 2407 1-9. They still contend that it is not in the granite and are resisting the plugback. I have attached the emails they have sent to defend their position.

The logs are what is in the folder for the Charly 2407 2-9 and 1-9. The first is the TD section of the Charly 2407 2-9, which shows granite, and was plugged back based on the mudlog. The second is the TD section of the 1-9. We do not have a paper copy of either log.

Jim

From: Dorsey, Nancy [mailto:Dorsey.Nancy@epa.gov]
Sent: Thursday, October 15, 2015 9:17 AM
To: Jim Marlatt
Subject: Sandridge Charly SWD 2407 - cont.

Also, did Sandridge plug back the Charly 1-9?

From: Dorsey, Nancy
Sent: Thursday, October 15, 2015 9:13 AM
To: Jim Marlatt
Subject: Sandridge Charly SWD 2407

Hi Jim,

I saw your Word document in the elog folder, which makes perfect sense. But the piece of mudlog in the doc, isn't anything close to the two mudlog pieces in the folder. They actually look like the Cavin completion pieces...though I haven't opened both at the same time. I am wondering whether there is an intact copy of the mudlog you found?

Thanks,
Nancy

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Dorsey, Nancy

From: Dorsey, Nancy
Sent: Thursday, October 15, 2015 9:31 AM
To: 'Megan Crocker'
Subject: RE: yellow 30-27-10

Thanks! I will check those next. What I am doing is updating my well database with the TD formation and supporting form it came from. Instead if just the F1002as I was using. Of course, I could probably pull it off your excel sheet if I had remembered that before now. (I was using it last week or the week before. Age....)

From: Megan Crocker [<mailto:M.Crocker@occemail.com>]
Sent: Thursday, October 15, 2015 9:29 AM
To: Dorsey, Nancy
Subject: RE: yellow 30-27-10

Thank you ☺

Yes AEP (well AEW), New Dominion, and Special Energy have the most in addition to Devon, Chesapeake and Sandridge.

From: Dorsey, Nancy [<mailto:Dorsey.Nancy@epa.gov>]
Sent: Thursday, October 15, 2015 9:27 AM
To: Megan Crocker
Subject: RE: yellow 30-27-10

Oops! Yes, sorry about that!

I went through Chesapeake (Yellow well in subject line) and Devon yesterday. Today I am working through Sandridge. I figure those three probably have the most Arbuckle wells?

From: Megan Crocker [<mailto:M.Crocker@occemail.com>]
Sent: Thursday, October 15, 2015 9:17 AM
To: Dorsey, Nancy
Subject: RE: yellow 30-27-10

They do, I assume Jim Phelps and his team put it into RBDMS?

Sandridge (and I think Devon) in the beginning only sent the base of the log to show whether or not they were in the granite, because that is what the march directive asked for. I believe we have asked for some to be resent with the full Arbuckle section, but we have not received or asked for all of them.

When you ask about wells would you also include the company name? It is helpful when I go check on information.

Megan

From: Dorsey, Nancy [<mailto:Dorsey.Nancy@epa.gov>]
Sent: Thursday, October 15, 2015 8:53 AM

To: Megan Crocker
Subject: RE: yellow 30-27-10

I know whose I would check first! ☺ But more seriously, the records do need to be found at some point and gotten into the scan system.

Is there a mudlog for the Cash SWD 1-32? The only one I found was a partial in the Cash 2-32 folder...it cuts off the base of the log.

From: Megan Crocker [<mailto:M.Crocker@occemail.com>]
Sent: Thursday, October 15, 2015 8:49 AM
To: Dorsey, Nancy
Subject: RE: yellow 30-27-10

I noticed quite a few plugbacks have supposedly occurred but the forms are MIA after reviewing the spreadsheet and folders. Not sure where they are probably in someone's email?

From: Dorsey, Nancy [<mailto:Dorsey.Nancy@epa.gov>]
Sent: Wednesday, October 14, 2015 4:41 PM
To: Megan Crocker
Subject: yellow 30-27-10

I guess I should have waited. ☺

The Yellow 30-27-10 folder is empty, there should be a 1085 from March.

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Dorsey, Nancy

From: Dorsey, Nancy
Sent: Thursday, October 15, 2015 8:50 AM
To: Jim Phelps
Subject: FW: Puller 7-26-10 1085 vs 1002a

Looks like Chesapeake should amend their F1002A.

From: Megan Crocker [<mailto:M.Crocker@occcemail.com>]
Sent: Thursday, October 15, 2015 8:45 AM
To: Dorsey, Nancy
Subject: RE: Puller 7-26-10 1085 vs 1002a

I would say that for the 1002A's they are more often than not, wrong for formation tops. Comparing logs to the 1002A's I've looked at they can be 50 feet off or more. There is no formation top police to encourage them give accurate information. And many of them go off mudlogs which can be about 30 feet off depending on drilling and mud circulation. I would assume the 1085 is more accurate.

From: Dorsey, Nancy [<mailto:Dorsey.Nancy@epa.gov>]
Sent: Wednesday, October 14, 2015 4:30 PM
To: Jim Marlatt; Megan Crocker
Subject: Puller 7-26-10 1085 vs 1002a

1085 says the Base Arbuckle is at 7855'
1002A says the TD is 7846'

hm?

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Dorsey, Nancy

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To: Megan Crocker (M.Crocker@occemail.com)
Subject: yellow 30-27-10

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Dorsey, Nancy

From: Dorsey, Nancy
Sent: Wednesday, October 14, 2015 4:39 PM
To: Megan Crocker (M.Crocker@occemail.com); Jim Marlatt
Subject: Tigris 24-24-11

The 1085 pdf is actually another copy of the mud log.

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Dorsey, Nancy

From: Jim Marlatt <J.Marlatt@occeemail.com>
Sent: Wednesday, October 14, 2015 2:13 PM
To: Dorsey, Nancy
Subject: RE: Dutch Harbor 1-14

Thanks. We had them plug 4 or 5 for samples not matching the descriptions, and are still going back and forth on one (access to the samples has not been available due to construction at the OGS).

From: Dorsey, Nancy [mailto:Dorsey.Nancy@epa.gov]
Sent: Wednesday, October 14, 2015 2:08 PM
To: Jim Marlatt
Cc: Megan Crocker; Charles Lord
Subject: RE: Dutch Harbor 1-14

Perfect! Good catch!

From: Jim Marlatt [mailto:J.Marlatt@occeemail.com]
Sent: Wednesday, October 14, 2015 2:06 PM
To: Dorsey, Nancy
Cc: Megan Crocker; Charles Lord
Subject: RE: Dutch Harbor 1-14

Nancy,

They plugged it back because when I reviewed the mudlog, there were a few things I did not like on it. The sample descriptions were generic, and did not change enough to suit me. I recognized the name of the mudlogger as someone who was notorious for having a file of premade mudlog he would use, to eliminate the need for any real analysis of the samples. I requested they look at the samples again, and when we met to discuss the review, they had found that there was granite/wash present shallower than TD, so they plugged back based on that depth.

Jim

From: Dorsey, Nancy [mailto:Dorsey.Nancy@epa.gov]
Sent: Wednesday, October 14, 2015 1:57 PM
To: Megan Crocker; Jim Marlatt
Cc: Charles Lord
Subject: Dutch Harbor 1-14

Any idea why they plugged this deviated well back? The mudlog shows it was still in dolomite. Or did I miss something? (always possible ☺)

Nancy S. Dorsey
Environmental Scientist
Oklahoma Class II Program Manager
WQ-SG EPA Region 6

1445 Ross Ave. #1200
Dallas, TX 75202-2733
214-665-2294
FAX 214-665-2191

Dorsey, Nancy

From: Jim Marlatt <J.Marlatt@occeemail.com>
Sent: Wednesday, October 14, 2015 2:06 PM
To: Dorsey, Nancy
Cc: Megan Crocker; Charles Lord
Subject: RE: Dutch Harbor 1-14

Nancy,

They plugged it back because when I reviewed the mudlog, there were a few things I did not like on it. The sample descriptions were generic, and did not change enough to suit me. I recognized the name of the mudlogger as someone who was notorious for having a file of premade mudlog he would use, to eliminate the need for any real analysis of the samples. I requested they look at the samples again, and when we met to discuss the review, they had found that there was granite/wash present shallower than TD, so they plugged back based on that depth.

Jim

From: Dorsey, Nancy [mailto:Dorsey.Nancy@epa.gov]
Sent: Wednesday, October 14, 2015 1:57 PM
To: Megan Crocker; Jim Marlatt
Cc: Charles Lord
Subject: Dutch Harbor 1-14

Any idea why they plugged this deviated well back? The mudlog shows it was still in dolomite. Or did I miss something? (always possible 😊)

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Dallas, TX 75202-2733
214-665-2294
FAX 214-665-2191

Dorsey, Nancy

From: Dorsey, Nancy
Sent: Thursday, October 08, 2015 2:07 PM
To: Dellinger, Philip
Subject: RE: Marjo Operating filing against Oklahoma Corporation Commission action - based on seismicity

I believe so, yes.

-----Original Message-----

From: Dellinger, Philip
Sent: Thursday, October 08, 2015 12:47 PM
To: Dorsey, Nancy
Subject: RE: Marjo Operating filing against Oklahoma Corporation Commission action - based on seismicity

So this goes to an OCC hearings examiner?

-----Original Message-----

From: Dorsey, Nancy
Sent: Thursday, October 08, 2015 8:22 AM
To: Dellinger, Philip
Cc: Lawrence, Rob; Bates, William
Subject: Marjo Operating filing against Oklahoma Corporation Commission action - based on seismicity
Importance: High

Details to go with yesterday's WAR.

-----Original Message-----

From: Matt Skinner [mailto:M.Skinner@occemail.com]
Sent: Wednesday, October 07, 2015 3:52 PM
To: Dorsey, Nancy
Subject: filing against Commission action

It has begun...so attached.

Matt

Dorsey, Nancy

From: Darold, Amberlee P. <adarold@ou.edu>
Sent: Thursday, October 08, 2015 12:45 PM
To: Dorsey, Nancy
Subject: RE: projection for files?

In all honesty I'm not exactly sure as I was in a hurry and improvising to get the OCC the data ASAP but I am going to say that it is very likely that it was projected in WGS84.

From: Dorsey, Nancy [Dorsey.Nancy@epa.gov]
Sent: Thursday, October 08, 2015 12:41 PM
To: Darold, Amberlee P.
Subject: RE: projection for files?

Hi Amberlee,
Thanks for sending, but our firewall stripped it. ☹ However, Kellie at OCC converted it to an shp and sent it to me. Was it WGS 84 already?
Nancy

From: Darold, Amberlee P. [mailto:adarold@ou.edu]
Sent: Thursday, October 08, 2015 12:38 PM
To: Dorsey, Nancy
Subject: RE: projection for files?

Nancy,
Attached is a shp file for the OK fault data base and it is in WGS84.
Amberlee

From: Dorsey, Nancy [Dorsey.Nancy@epa.gov]
Sent: Wednesday, October 07, 2015 10:01 AM
To: Darold, Amberlee P.
Subject: projection for files?

Hi Amberlee,
Kellie walked me through the file conversion. (<http://www.mapshaper.org/>) ☺ But it doesn't transfer the projection information. Was this in WGS84?

Thanks,

Nancy

Nancy S. Dorsey
Environmental Scientist
Oklahoma Class II Program Manager
WQ-SG EPA Region 6
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Dallas, TX 75202-2733
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FAX 214-665-2191

Dorsey, Nancy

From: Darold, Amberlee P. <adarold@ou.edu>
Sent: Wednesday, October 07, 2015 8:26 AM
To: Dorsey, Nancy
Subject: Re: Up-to-Date Fault Database

Nancy,

I am unable to remotely connect to our data base and will not be in the office until Thursday. The OCC was in need and this is what I was able to create. ESRI does accept this file type but Thursday I will try to remember to send you this in shp file form.

Best,
Amberlee

Sent to you from Amberlee's iPhone

On Oct 7, 2015, at 8:16 AM, Dorsey, Nancy <Dorsey.Nancy@epa.gov> wrote:

Thanks Amberlee, but I don't have anything that will read that type of file. What software does it go with? I, like OCC, use ESRI. A shapefile or dbf would be great.

Sorry to be so much trouble!

Nancy

From: Darold, Amberlee P. [<mailto:adarold@ou.edu>]
Sent: Tuesday, October 06, 2015 7:38 PM
To: Dorsey, Nancy; Charles Lord; b.ice@occemail.com
Subject: RE: Up-to-Date Fault Database
Try this... Sorry!

From: Dorsey, Nancy [Dorsey.Nancy@epa.gov]
Sent: Tuesday, October 06, 2015 6:13 PM
To: Darold, Amberlee P.; Charles Lord; b.ice@occemail.com
Subject: RE: Up-to-Date Fault Database

Was there supposed to be an attachment?

FYI, you send a zip file, change the ending or it will be stripped. ☹ Our wonderful firewall system.

From: Darold, Amberlee P. [<mailto:adarold@ou.edu>]
Sent: Tuesday, October 06, 2015 5:38 PM
To: Charles Lord; Dorsey, Nancy; b.ice@occemail.com
Subject: Up-to-Date Fault Database

Here is the most up to date fault database. However, the industry contributed data is no included in this file but is in the preliminary compilation of faults for OK, which you should all have access to.

Let me know if you need anything further.

Best,

Amberlee Darold

Research Seismologist | Oklahoma Geological Survey
The University of Oklahoma Mewbourne College of Earth and Energy
Sarkeys Energy Center, 100 E. Boyd St., Room E-132, Norman, OK 73019-0628
adarold@ou.edu | PH: (405) 325-8611 | CELL: (541) 915-7572

Dorsey, Nancy

From: Darold, Amberlee P. <adarold@ou.edu>
Sent: Tuesday, October 06, 2015 5:38 PM
To: Charles Lord; Dorsey, Nancy; b.ice@occemail.com
Subject: Up-to-Date Fault Database

Here is the most up to date fault database. However, the industry contributed data is no included in this file but is in the preliminary compilation of faults for OK, which you should all have access to.
Let me know if you need anything further.
Best,

Amberlee Darold

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adarold@ou.edu | PH: (405) 325-8611 | CELL: (541) 915-7572

Dorsey, Nancy

From: Dorsey, Nancy
Sent: Thursday, October 01, 2015 11:05 AM
To: 'Jim Marlatt'; 'Darold, Amberlee P.'
Cc: 'Charles Lord'
Subject: RE: OGS earthquakes and directives - quick look for weekly update

So, the list doesn't track the date of the plugback, but the date it was reported? For example, there weren't actually 134 wells plugged back on 3/18/15.

-----Original Message-----

From: Jim Marlatt [mailto:J.Marlatt@occmemail.com]
Sent: Thursday, October 01, 2015 10:29 AM
To: Darold, Amberlee P.; Dorsey, Nancy
Cc: Charles Lord
Subject: RE: OGS earthquakes and directives - quick look for weekly update

Done.

-----Original Message-----

From: Charles Lord
Sent: Thursday, October 01, 2015 10:02 AM
To: Jim Marlatt
Subject: FW: OGS earthquakes and directives - quick look for weekly update

Would you email the latest action spreadsheet to Nancy and Amberlee please.

This will give them plug back numbers, locations and dates.

Thanks,

Charles Lord

From: Dorsey, Nancy [Dorsey.Nancy@epa.gov]
Sent: Thursday, October 01, 2015 9:45 AM
To: Charles Lord; Tim Baker; Patricia Downey
Cc: Matt Skinner
Subject: OGS earthquakes and directives - quick look for weekly update

Of course if the count of plugged-back wells was available by date that would be an interesting addition!

OKLAHOMA 2015 SEISMICITY SUMMARY TO DATE: The Oklahoma Corporation Commission (OCC) has issued a series of directives aimed at reducing the seismicity rate. The first directive defined an Area of Interest, based on a Ground Water/UIC staff recommendation, to require all disposal operators to supply additional reporting information, daily volumes and pressures. The second expanded the area but limited the reporting to Arbuckle and deeper wells. The third reduced the allowed disposal volume in a narrowly defined area in Logan County. The most recent directive shut-in several wells and reduced volumes in others near Cushing. Not shown are the number of wells which have plugged back

out of crystalline basement in the last year. The Oklahoma Geologic Survey (OGS) changed how they calculate large magnitude earthquakes to magnitude moment (M_w) instead of the local (M_l) or Richter type calculation. There was considerable press owing to the resulting reduction in high magnitude earthquakes.

[cid:image001.png@01D0FC2D.F775E150]

Dorsey, Nancy

From: Dorsey, Nancy
Sent: Thursday, October 01, 2015 11:01 AM
To: 'Matt Skinner'
Subject: RE: OGS earthquakes and directives - quick look for weekly update

Aren't Cresent and Logan county the same? I did say the plugbacks were not included.

From: Matt Skinner [mailto:M.Skinner@occemail.com]
Sent: Thursday, October 01, 2015 10:53 AM
To: Dorsey, Nancy
Subject: RE: OGS earthquakes and directives - quick look for weekly update

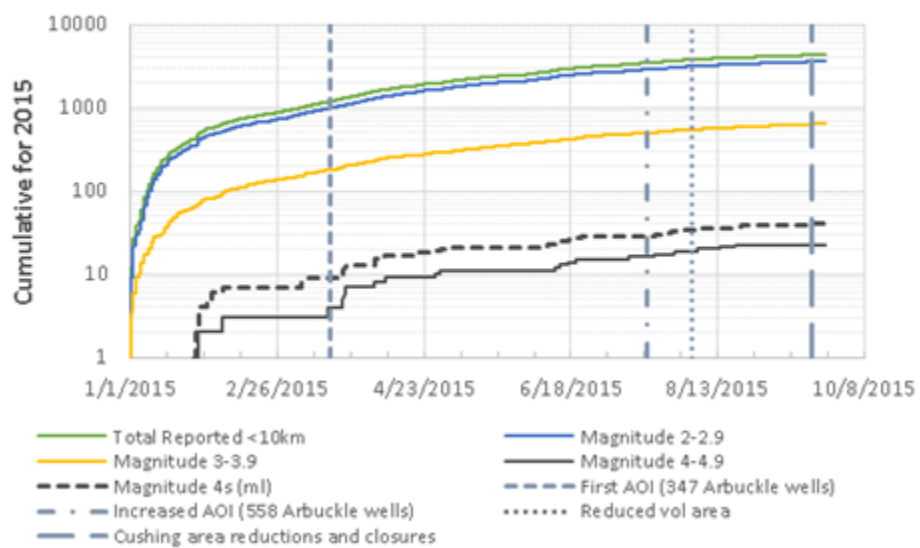
The narrative is missing the Crescent action, and makes no mention of the plug back requirement in both directives.

From: Dorsey, Nancy [mailto:Dorsey.Nancy@epa.gov]
Sent: Thursday, October 01, 2015 9:46 AM
To: Charles Lord; Tim Baker; Patricia Downey
Cc: Matt Skinner
Subject: OGS earthquakes and directives - quick look for weekly update

Of course if the count of plugged-back wells was available by date that would be an interesting addition!

OKLAHOMA 2015 SEISMICITY SUMMARY TO DATE: The Oklahoma Corporation Commission (OCC) has issued a series of directives aimed at reducing the seismicity rate. The first directive defined an Area of Interest, based on a Ground Water/UIC staff recommendation, to require all disposal operators to supply additional reporting information, daily volumes and pressures. The second expanded the area but limited the reporting to Arbuckle and deeper wells. The third reduced the allowed disposal volume in a narrowly defined area in Logan County. The most recent directive shut-in several wells and reduced volumes in others near Cushing. **Not shown are the number of wells which have plugged back out of crystalline basement in the last year.** The Oklahoma Geologic Survey (OGS) changed how they calculate large magnitude earthquakes to magnitude moment (Mw) instead of the local (MI) or Richter type calculation. There was considerable press owing to the resulting reduction in high magnitude earthquakes.

2015 OGS Earthquake Events (<10 km deep)



Dorsey, Nancy

From: Dorsey, Nancy
Sent: Thursday, October 01, 2015 9:01 AM
To: 'Charles Lord'
Cc: Kellie Duncan (K.Duncan@occeemail.com)
Subject: RE: replace or supplement to earlier fault files

Thanks! I talked with Amberlee, then tried to call you.

She said the OF03 version, doesn't have the segments for the optimal orientation. The OF04 is too complex for ESRI. She also has no idea about what level the faults cut, that is the project Austin and the intern were working on.

She was concerned about having it publicized, so I suggested that I would get the info from you-if you have it. She will contact you about getting you the latest fault database file after she has spoken with the intern working on it.

Hope you get to feeling better and aren't shaky! :-) bad pun I know.
Nancy

-----Original Message-----

From: Charles Lord [mailto:C.Lord@occeemail.com]
Sent: Thursday, October 01, 2015 8:51 AM
To: Dorsey, Nancy
Subject: RE: replace or supplement to earlier fault files

Home on sick leave.

This is the latest on basement subseas.

I do not have a polyline fault shapefile.

Sounds like a good project for Kelly.

Charles

From: Dorsey, Nancy [Dorsey.Nancy@epa.gov]
Sent: Tuesday, September 29, 2015 11:23 AM
To: Darold, Amberlee P.
Cc: Charles Lord
Subject: RE: replace or supplement to earlier fault files

This was actually a continuation of a previous e-mail request. If you have time, it would probably be easier to chat, but I suspect you are more than swamped!

I downloaded the latest OF04-2015 shapefiles. I was previously provided with the fault database shapefiles which contain some designations of the horizons the faults cut. I believe that was primarily from published literature.

My basic question, is whether we (OCC & I) can use the OF04-2015 faults as part of the top Basement map they are working on, or not? If it is primarily a basement fault set, do you have a version where it is just the fault polylines without the segments? ArcMap is having difficulty handling the complexity.

Thanks!
Nancy

From: Darold, Amberlee P. [mailto:adarold@ou.edu]
Sent: Tuesday, September 29, 2015 10:27 AM
To: Dorsey, Nancy
Subject: RE: replace or supplement to earlier fault files

Hey Nancy,
I am not sure what you are asking...?

From: Dorsey, Nancy [Dorsey.Nancy@epa.gov]
Sent: Wednesday, September 23, 2015 2:24 PM
To: Darold, Amberlee P.
Cc: Charles Lord

Subject: replace or supplement to earlier fault files Sorry, I forgot to ask would the OF file be considered supplemental or a replacement to the earlier fault geodatabase files? I believe that was a mix of publications, in-house data and supplied data. Where it came from is not the interest, only the horizon or reliability of the data. Thanks again!

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Dorsey, Nancy

From: Dorsey, Nancy
Sent: Thursday, September 24, 2015 9:49 AM
To: 'Megan Crocker'
Subject: RE: Top basement mapping games
Attachments: UIC_WELLS9SP.xlsx; volumes_081415.xlsx

I used the info connected under *R:\county_cov\A_TrafficLightWells\AA_Arbuckle_Granite_Wells\OKBasementWells-GIS Files\Subsea_9-22-2015*

I am into county 147, in updating the past annual disposal volumes for Arbuckle and deeper wells. Some of the F1002As actually list Granite. My formation at TD, if there is a? after the formation, it means it may be in it, but I suspect it could be below it. If I am sure it is below I put an > in front. My latest is attached, feel free to share or post in the folder, Jim P. has going with my name on it. Makes sense to add the volume file as well. ☺

Nancy

From: Megan Crocker [mailto:M.Crocker@occeemail.com]
Sent: Thursday, September 24, 2015 9:39 AM
To: Dorsey, Nancy
Subject: RE: Top basement mapping games

Yes it does look pretty good. I am working on cleaning up some of the data using those maps, so a few points might disappear. I look forward to getting arcmap so then I can start making some maps! Which spreadsheet did you get data from? I merged our data with another sources data so there were ~600 points if I remember correctly, across the state.

Megan

From: Dorsey, Nancy [mailto:Dorsey.Nancy@epa.gov]
Sent: Thursday, September 24, 2015 9:29 AM
To: Charles Lord; Megan Crocker; Jim Marlatt
Cc: Phil Dellinger (delling.p88@gmail.com)
Subject: Top basement mapping games

I played with your data to see if the map give a better alternative using the fault data. For the attached variation of your map, I did the following: in WGS84

1. Repeatedly dissolved (simplified) the OF04_2015 fault set, then set it to length >= 0.01
2. Spline with Barriers
 - a. Top_Basement set (yeah, wrong datum)
 - i. Basement_1 (merged subsea depths <> 0)
 - b. Output cell size (let the computer set it) 0.01203619732
3. Contour with Barriers
 - a. Above raster (Spline_FaultsV2)
 - b. OF4_2015_simplify

- c. Polylines
- d. Base Contour -11500
- e. Contour Interval 100
- f. Indexed Contour 500
- 4. Contours were clipped to the Oklahoma border, but it should have been even tighter
- 5. The earthquakes are the combined: All_reloc_20091023_20150526
 - a. USGS (USGS_reloc_20091023_20150409), pre Austin's file and
 - b. Austin's relocated file (OGS_reloc_2013_20150626),
- 6. plus OGS to yesterdays' download, after 05/26/2015:Sept23_2015

I think the map works slightly better, but the next step would be adding in the well defined seismically active faults to the existing dataset—for key areas. ☺

Also, there are either missing faults or bad tops in Payne Co. But then we already know there are a lot of missing faults!

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Dorsey, Nancy

From: Dorsey, Nancy
Sent: Thursday, September 24, 2015 8:44 AM
To: 'Charles Lord'
Subject: RE: Faults with formation data

It's a really old file, which didn't attach. Yes I do have one from when they started adding the publications etc. But I also suspect they have a lot more info.

FYI, the fault set is too complicated to allow contouring as is. Maybe if we could get the file **before** they broke the faults up to add azimuths, it would work.

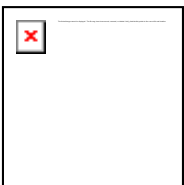
From: Charles Lord [mailto:C.Lord@occemail.com]
Sent: Thursday, September 24, 2015 8:39 AM
To: Dorsey, Nancy
Subject: Faults with formation data

I am almost certain you have this.

Some of the faults have a top and bottom formation.

If you get any additional data from Amberlee let me know.

Charles Lord
Senior Hydrologist
Oklahoma Corporation Commission
Post Office Box 52000
Oklahoma City, Oklahoma 73152
(405)522-2751
c.lord@occemail.com



Dorsey, Nancy

From: Dorsey, Nancy
Sent: Wednesday, September 23, 2015 1:59 PM
To: 'Charles Lord'
Subject: RE:

Yes, the trick is figuring out which fault file has a good basement set. I am looking at it now.

From: Charles Lord [<mailto:C.Lord@occeemail.com>]
Sent: Wednesday, September 23, 2015 1:34 PM
To: Dorsey, Nancy
Subject: RE:

You mean as barriers for “spline with barriers”?

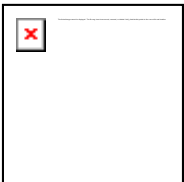
From: Dorsey, Nancy [<mailto:Dorsey.Nancy@epa.gov>]
Sent: Wednesday, September 23, 2015 11:39 AM
To: Charles Lord
Subject: RE:

You really need to include the basement faults from OGS.

From: Charles Lord [<mailto:C.Lord@occeemail.com>]
Sent: Wednesday, September 23, 2015 10:43 AM
To: Dorsey, Nancy
Subject:

Our subsea map of Basement.

Charles Lord
Senior Hydrologist
Oklahoma Corporation Commission
Post Office Box 52000
Oklahoma City, Oklahoma 73152
(405)522-2751
c.lord@occeemail.com



Dorsey, Nancy

From: Dorsey, Nancy
Sent: Thursday, September 03, 2015 3:31 PM
To: Jim Marlatt; Megan Crocker (M.Crocker@occemail.com)
Subject: Arbuckle

Snagged from the OGS file *Field Studies and Type Logs Aug 12*. I just filtered on the Arbuckle maps. I know it's a bit outside your mapping efforts, but do you have any core data or porosity permeability relationships? Particularly in Oklahoma County?

FIELD	TOWNSHIP	RANGE	COUNTY	MAP (1)	MAP (2)
BROCK (CRINERVILLE)	5S	1E	CARTER	CONTOUR ON ERODED ARBUCKLE	
BUFFALO N	28N	22W	HARPER	STRUCTURE ON ARBUCKLE DOLOMITE	
COUNTRY CLUB	20N	12E	OSAGE	SUB SURFACE STRUCTURE ON ARBUCKLE DOL	
CUSHING	16-18N	7E	CREEK	STRUCTURE ON ARBUCKLE	STRUCT
				STRUCTURE ON ARBUCKLE	
MAYFIELD W	10N	25W	BECKHAM	DOLOMITE	LOCATI
OKLAHOMA CITY	11-12N	2-3W	OKLAHOMA	CONTOUR ON ARBUCKLE LS	REGION
WHITECLIFF DOME	25N	8E	OSAGE	SUB SURFACE STRUCTURE ON ARBUCKLE DOL	
YELLOWSTONE	29N	17W	WOODS	TOP ARBUCKLE	

Dorsey, Nancy

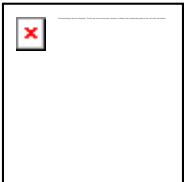
From: Dorsey, Nancy
Sent: Monday, August 31, 2015 11:10 AM
To: 'Charles Lord'
Subject: RE:

<http://www.okgeosurvey1.gov/pages/research.php> OGS reports and downloadable files

From: Charles Lord [mailto:C.Lord@occemail.com]
Sent: Monday, August 31, 2015 11:03 AM
To: Dorsey, Nancy
Subject:

R:\county_cov\A_TrafficLightWells\Fault_Azimuths

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Oklahoma Corporation Commission
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(405)522-2751
c.lord@occemail.com



Dorsey, Nancy

From: Dorsey, Nancy
Sent: Tuesday, August 11, 2015 10:20 AM
To: Jim Phelps; Patricia Downey; Charles Lord
Subject: 1012A final report issue

I notice on a couple of the Arbuckle wells that had their orders terminated, the operator never filed the last 1012a for the partial year. Is there anything that can be done to ensure that the operator's do file that last report?

- 081-23682; 2011 report
- 081-23725; 2014 report
- 037-28159; last report was 2010 TM in Nov. 2013
- 071-20232; 2013 report
- 071-23589; 2013 report
- 073-24778; not happened yet TM May 2015
-

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Dorsey, Nancy

From: Dorsey, Nancy
Sent: Wednesday, August 05, 2015 12:59 PM
To: Megan Crocker (M.Crocker@occemail.com)
Subject: Devon with year calcs
Attachments: Devon Energy New form 7-20-2015_Final_NSDversion.xlsm

And one correction for no cums on a new well. (Sorry, I don't remember which)

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Dorsey, Nancy

From: Dorsey, Nancy
Sent: Tuesday, August 04, 2015 11:49 AM
To: 'Megan Crocker'; 'Suzi Doyal'
Subject: RE: OCC - Sandridge Energy

Oh a word of caution, new sheets need to have the API line in **row 4**, otherwise the positioning will be off for indirect lookups. That started because of some OCC and date title rows.

From: Megan Crocker [mailto:M.Crocker@occemail.com]
Sent: Tuesday, August 04, 2015 10:29 AM
To: Suzi Doyal; Dorsey, Nancy
Subject: RE: OCC - Sandridge Energy

Suzi,

Here it is. I also fixed formatting and other calculation errors in it as well. Should be good now!

Megan

From: Suzi Doyal
Sent: Tuesday, August 04, 2015 8:17 AM
To: Dorsey, Nancy
Cc: Megan Crocker
Subject: OCC - Sandridge Energy

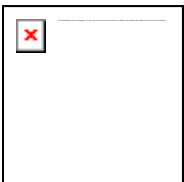
Good Morning Nancy,

I am sorry to bother you, but Diane Overby @ Sandridge Energy & I are have an issue with the graphs on the volume reporting sheets. In the past weeks we have added several wells and on those tabs the barrels are not plotting on the graph. The pressure is plotting but not the barrels. Could you please look at Sandridge's sheet for us?

We would really appreciate you assistance.

Thanks

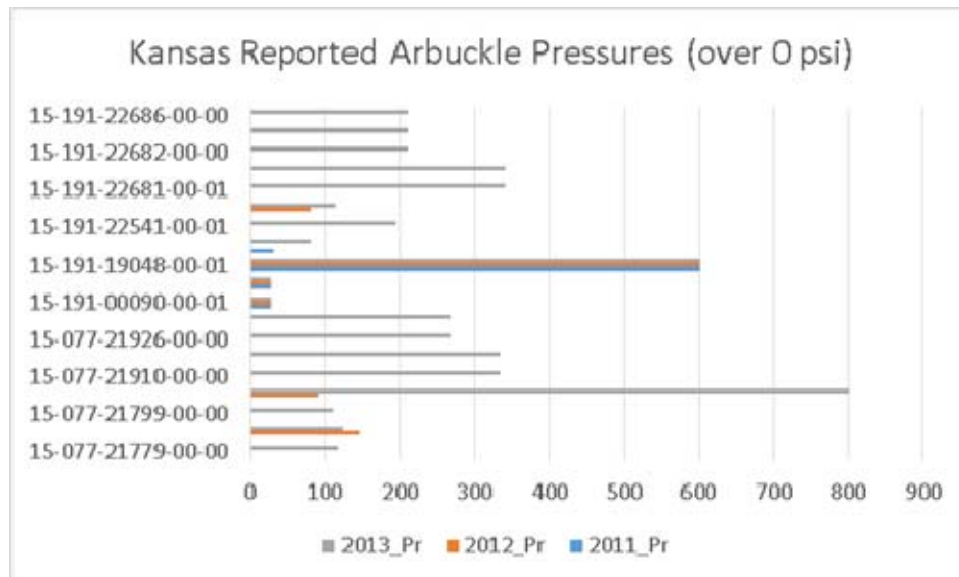
Suzi Doyal
Volume Reporting
Underground Injection Control
Oklahoma Corporation Commission
P.O. Box 52000
Oklahoma City, OK 73152
405-521-2278



Dorsey, Nancy

From: Dorsey, Nancy
Sent: Thursday, July 23, 2015 10:29 AM
To: Hildebrandt, Kurt
Cc: Dellinger, Philip; Johnson, Ken-E
Subject: RE: detailed Kansas displays

Actually, I must have been glancing at the wrong entries there are no 2014 pressures.



	2011	2012	2013	2014
Arbuckle Volumes	10,881,198	33,347,129	72,112,018	124,804,192
Active selected wells	47	71	97	123

When did Kansas institute the reduced injection?

From: Hildebrandt, Kurt
Sent: Thursday, July 23, 2015 9:38 AM
To: Dorsey, Nancy
Cc: Dellinger, Philip; Johnson, Ken-E
Subject: RE: detailed Kansas displays

Having my coffee so I may not be seeing clearly but am I seeing a drop in the pressures for 2012 on some of the wells?

From: Dorsey, Nancy
Sent: Wednesday, July 22, 2015 5:25 PM
To: Hildebrandt, Kurt
Cc: Dellinger, Philip; Johnson, Ken-E
Subject: detailed Kansas displays

Interesting!

Nancy S. Dorsey
Environmental Scientist
Oklahoma Class II Program Manager
WQ-SG EPA Region 6
1445 Ross Ave. #1200
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FAX 214-665-2191

Dorsey, Nancy

From: Dorsey, Nancy
Sent: Thursday, July 23, 2015 9:57 AM
To: Hildebrandt, Kurt
Cc: Dellinger, Philip; Johnson, Ken-E
Subject: RE: detailed Kansas displays

View Tools analyze

With Object data tool Click on box (wait impatiently: click several times, first the points have to turn red then you can select)

Or toggle Layers/Detail/KS_ArbucklePlus_maxPr and scroll through the wells
Wrigley – significant increase in Pressure since 2012
Junebug started 2013, significant pressure increase in 2014
...ditto both Jills, Rizzo, Madison,

Hm, looks like a trend! I would say that 1012 pressures were lowest both from fewer disposal wells and the generally increasing pressure used where pressure is used.

From: Hildebrandt, Kurt
Sent: Thursday, July 23, 2015 9:38 AM
To: Dorsey, Nancy
Cc: Dellinger, Philip; Johnson, Ken-E
Subject: RE: detailed Kansas displays

Having my coffee so I may not be seeing clearly but am I seeing a drop in the pressures for 2012 on some of the wells?

From: Dorsey, Nancy
Sent: Wednesday, July 22, 2015 5:25 PM
To: Hildebrandt, Kurt
Cc: Dellinger, Philip; Johnson, Ken-E
Subject: detailed Kansas displays

Interesting!

Nancy S. Dorsey
Environmental Scientist
Oklahoma Class II Program Manager
WQ-SG EPA Region 6
1445 Ross Ave. #1200
Dallas, TX 75202-2733
214-665-2294
FAX 214-665-2191

Dorsey, Nancy

From: Dorsey, Nancy
Sent: Wednesday, July 22, 2015 5:26 PM
To: Hildebrandt, Kurt
Cc: Dellinger, Philip; Johnson, Ken-E
Subject: combined pressure and volume
Attachments: KS_Vol_Pr.jpg

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Oklahoma Class II Program Manager
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Dorsey, Nancy

From: Dorsey, Nancy
Sent: Wednesday, July 22, 2015 5:25 PM
To: Hildebrandt, Kurt
Cc: Dellinger, Philip; Johnson, Ken-E
Subject: detailed Kansas displays
Attachments: KS_Volumes.pdf; KS_Pressures.pdf

Interesting!

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214-665-2294
FAX 214-665-2191

Dorsey, Nancy

From: Dorsey, Nancy
Sent: Wednesday, July 22, 2015 4:55 PM
To: Hildebrandt, Kurt
Cc: Dellinger, Philip; Johnson, Ken-E
Subject: Kansas township and county views of Arbuckle Disposal with seismicity in KS and OK
Attachments: KS_Townships.pdf; KS_OK_county.jpg; KS_County.pdf

Nothing private about earthquakes, nor the published area of interest. (I don't have Kansas AOI, but if they want to send me the shapefile I will add it. ☺)

The lines are my interpretation through the Oklahoma Geologic Survey relocated seismic events plus the earlier USGS relocated events in Oklahoma and all the USGS relocated events in Kansas. A bit redundant phrasing, but it covers it.

I will send the detailed one separately.

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FAX 214-665-2191

Dorsey, Nancy

From: Dorsey, Nancy
Sent: Wednesday, July 22, 2015 3:04 PM
To: Hildebrandt, Kurt
Subject: RE: KS Arbuckle disposal wells

Thanks

From: Hildebrandt, Kurt
Sent: Wednesday, July 22, 2015 2:36 PM
To: Dorsey, Nancy
Subject: FW: KS Arbuckle disposal wells

Here you go.

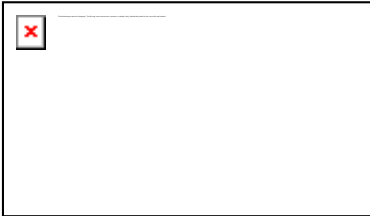
From: Rene Stucky [<mailto:r.stucky@kcc.ks.gov>]
Sent: Wednesday, July 22, 2015 1:25 PM
To: Hildebrandt, Kurt
Subject: KS Arbuckle disposal wells

Kurt,

Here is the updated spread sheet with the location of the well you requested. The GPS locations are NAD83

Rene

Rene Stucky
UIC Director/Production Supervisor



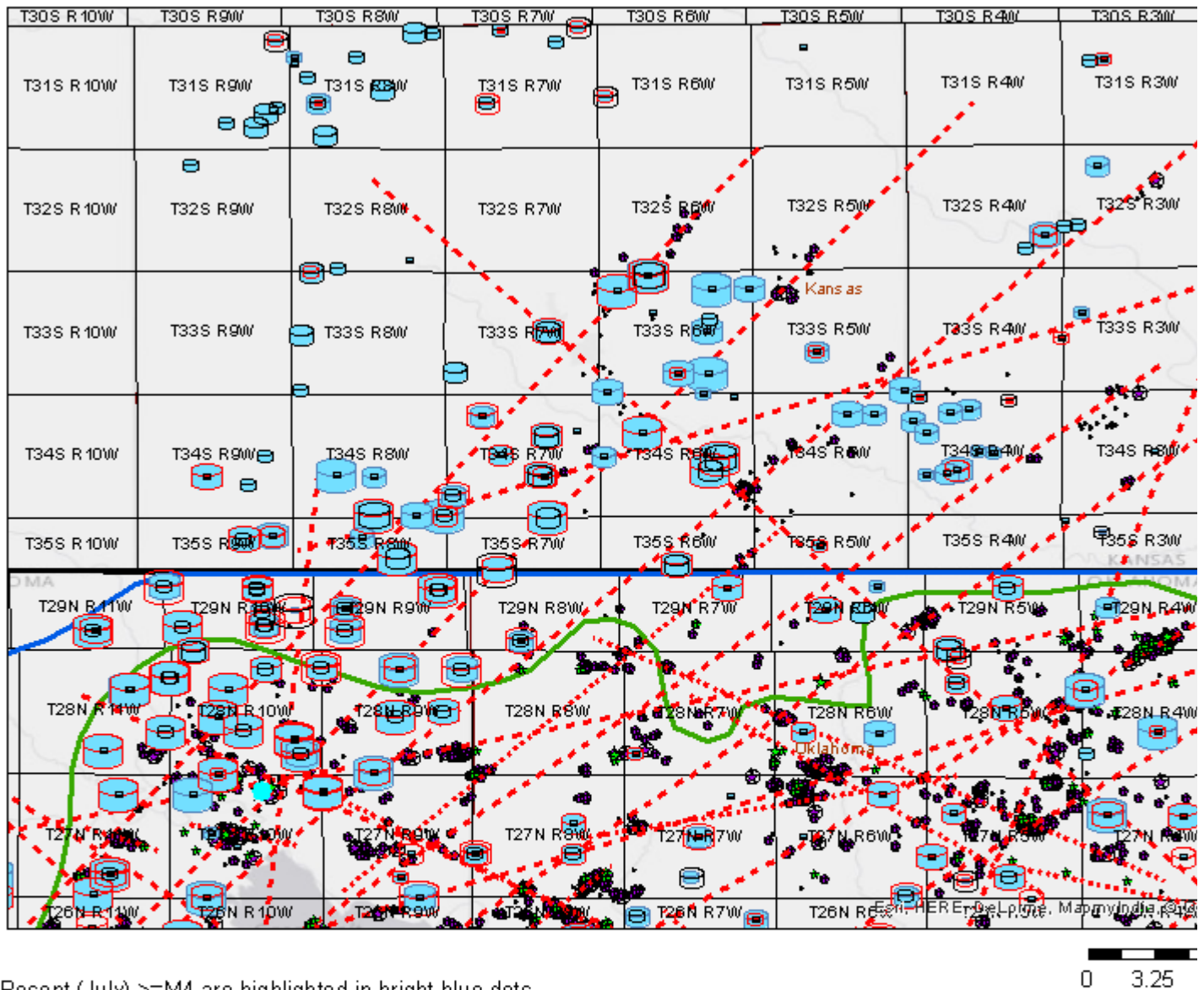
UIC-Production Department
Kansas Corporation Commission
266 N. Main St., Ste. 220 | Wichita, KS | 67202-1513
Phone (316) 337-6223 | Fax (316) 337-6211 | <http://kcc.ks.gov/>

Dorsey, Nancy

From: Dorsey, Nancy
Sent: Wednesday, July 22, 2015 11:28 AM
To: Hildebrandt, Kurt
Cc: Dellinger, Philip
Subject: RE: missing location

Thanks. This is the result of the close-up. ☺ I am trying to catch OCC about sharing. The ones with only the big tank symbol and a really small black center, only started in 2014.

RELOCATED SEISMIC EVENTS 10/23/09 - 6/26/15; unreloc



2012_Vol	2013_Vol	2014_Vol	June to 7/20/15 AM unrelocated	Seism
0 - 52000	0 - 52000	0 - 52000	0.5 - 2.0	Seism
52001 - 425000	52001 - 425000	52001 - 425000	2.1 - 3.0	Area c
425001 - 1072500	425001 - 1072500	425001 - 1072500	3.1 - 4.0	AOI_6
1072501 - 2631000	1072501 - 2631000	1072501 - 2631000	4.1 - 5.0	ksok_1
2631001 - 25109608	2631001 - 25109608	2631001 - 25109608	5.1 - 6.0	

From: Hildebrandt, Kurt

Sent: Wednesday, July 22, 2015 11:24 AM

To: Dorsey, Nancy

Subject: RE: missing location

I have asked the questions. Let you know what I hear back.

From: Dorsey, Nancy
Sent: Wednesday, July 22, 2015 11:06 AM
To: Hildebrandt, Kurt
Subject: missing location

Sorry, the add on well:

15-077-22086-00-
00 D32007.0 Rocky SWD 3306 1-16

Has a 2014 volume but no location or interval information.

From: Hildebrandt, Kurt
Sent: Wednesday, July 22, 2015 10:58 AM
To: Dorsey, Nancy
Subject: RE: KS Disposal Well Volumes

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Sent: Wednesday, July 22, 2015 10:17 AM
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What is the unit for the numbers reported in the annual columns (W,X,Y & Z)? Trying to decipher that along with the significance of the numbers after the initial string (i.e. "- 0" or "(-10)").

Thanks,
Kurt

From: Rene Stucky [<mailto:r.stucky@kcc.ks.gov>]
Sent: Wednesday, July 22, 2015 9:03 AM
To: Hildebrandt, Kurt
Cc: Ryan A. Hoffman
Subject: FW: KS Disposal Well Volumes

Kurt,

This is what we have. Let me know if we can be of further assistance.

Rene

From: Hildebrandt, Kurt [<mailto:Hildebrandt.Kurt@epa.gov>]
Sent: Tuesday, July 21, 2015 12:05 PM
To: Ryan A. Hoffman; Rene Stucky
Subject: KS Disposal Well Volumes
Importance: High

Ryan & Rene –

I've been working with Nancy Dorsey (EPA – Region 6) on some additional information gathering related to Arbuckle disposal wells in KS and OK and need a little help as the Kansas Commission website says searchable online data isn't yet available for disposal wells.

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Regards,
Kurt

Kurt F. Hildebrandt
US Environmental Protection Agency - Region 7
Water, Wetlands & Pesticides Division
11201 Renner Boulevard
Lenexa, Kansas 66219

Voice: **913-551-7413**
FAX: **913-551-9413**

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Voice: **913-551-7413**
FAX: **913-551-9413**

Dorsey, Nancy

From: Dorsey, Nancy
Sent: Wednesday, July 22, 2015 11:02 AM
To: Hildebrandt, Kurt
Subject: RE: KS Disposal Well Volumes

Actually, there is one other question. Are the latitude and longitude in NAD83?

From: Hildebrandt, Kurt
Sent: Wednesday, July 22, 2015 10:58 AM
To: Dorsey, Nancy
Subject: RE: KS Disposal Well Volumes

I noticed that but the order seems jumbled from what you had sent. So I'm not sure what's going on. Now that we have the key to those columns, is the data useful or do we need anything more from them?

From: Dorsey, Nancy
Sent: Wednesday, July 22, 2015 10:56 AM
To: Hildebrandt, Kurt
Subject: RE: KS Disposal Well Volumes

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Subject: RE: KS Disposal Well Volumes

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Lenexa, Kansas 66219

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FAX: **913-551-9413**

Dorsey, Nancy

From: Dorsey, Nancy
Sent: Wednesday, July 22, 2015 11:01 AM
To: Hildebrandt, Kurt
Subject: RE: KS Disposal Well Volumes

Order isn't a problem. My thanks to you and Rene for the info, this will work.

From: Hildebrandt, Kurt
Sent: Wednesday, July 22, 2015 10:58 AM
To: Dorsey, Nancy
Subject: RE: KS Disposal Well Volumes

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From: Dorsey, Nancy
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To: Hildebrandt, Kurt
Subject: RE: KS Disposal Well Volumes

Thanks for trying, but you just sent me my own file back! As far as I can tell the only change is an additional mostly blank line in row 128. If there are volumes injected, not rates, please tell me what the header is.

For example, I have no idea what U3C is supposed to stand for. Let alone U3C_r other than they are not numbers but a range, so suspect it is the range of rates but in what units not a clue.

I have a more complete list, this was the wells of more interest.

From: Hildebrandt, Kurt
Sent: Wednesday, July 22, 2015 9:15 AM
To: Dorsey, Nancy
Subject: FW: KS Disposal Well Volumes

See if this helps you.

From: Rene Stucky [<mailto:r.stucky@kcc.ks.gov>]
Sent: Wednesday, July 22, 2015 9:03 AM
To: Hildebrandt, Kurt
Cc: Ryan A. Hoffman
Subject: FW: KS Disposal Well Volumes

Kurt,

This is what we have. Let me know if we can be of further assistance.

Rene

From: Hildebrandt, Kurt [<mailto:Hildebrandt.Kurt@epa.gov>]
Sent: Tuesday, July 21, 2015 12:05 PM
To: Ryan A. Hoffman; Rene Stucky
Subject: KS Disposal Well Volumes
Importance: High

Ryan & Rene –

I've been working with Nancy Dorsey (EPA – Region 6) on some additional information gathering related to Arbuckle disposal wells in KS and OK and need a little help as the Kansas Commission website says searchable online data isn't yet available for disposal wells.

I've attached two files (an Excel file with the listing of Arbuckle disposal wells in Harper and Sumner counties which may be incomplete and the other being a map showing the disposal rates for 2012 – 2014 along with earthquake activity and

possible fault trends) and was wondering if it would be possible get the injection volumes for the wells that we have listed for the years 2012-2014? (we would also be interested in getting information on any wells which we don't have on our list)

At this point, the information that we are gathering is just for internal use and we would let you know if that might change. I'd appreciate any information you could provide us and please get back to me if you should have any questions on this project or what we are looking for.

Regards,
Kurt

Kurt F. Hildebrandt
US Environmental Protection Agency - Region 7
Water, Wetlands & Pesticides Division
11201 Renner Boulevard
Lenexa, Kansas 66219

Voice: **913-551-7413**
FAX: **913-551-9413**

Dorsey, Nancy

From: Holland, Austin A. <austin.holland@ou.edu>
Sent: Wednesday, July 08, 2015 8:32 AM
To: Dorsey, Nancy
Cc: Darold, Amberlee P.
Subject: Re: various

Thanks Nancy,

The minimum magnitude of felt earthquakes really depends on the depth of the earthquakes and the distance to more populated areas. While small earthquakes in more rural areas may be just as commonly felt we tend to get less numbers of earthquakes reported felt by local residents. Either they don't have internet, were too busy to notice, or are not as concerned to take the time to report them. The smallest earthquakes reported felt in Oklahoma are about M1.8 but those earthquakes were quite shallow in Love County. Generally it is about a M2.1 to M2.3 where we begin to get earthquakes being felt by residents living near the epicenter. At our current staffing levels we are not even able to report all earthquakes that are likely being felt, and we are having so many in some areas residents don't bother letting us or the USGS know they are feeling them. I don't think we can count on reliability of reporting to examine whether there are spatial factors associated with geology that affect how earthquakes are reported felt.

I do not know how my departure will affect the RPSEA grant nor the survey. There could be some challenging times ahead for the survey, but my leaving may help to bring our current understaffing issues to more of a head, and perhaps bring about change.

Regards,
Austin A. Holland, Ph.D.

State Seismologist | Oklahoma Geological Survey

The University of Oklahoma Mewbourne College of Earth and Energy

Sarkeys Energy Center, 100 E. Boyd St., Room E-128, Norman, OK 73019-0628

austin.holland@ou.edu | PH: (405) 325-8497 | CELL: (405) 361-9967 | FAX 325-7069

From: "Dorsey, Nancy" <Dorsey.Nancy@epa.gov>
Date: Tuesday, July 7, 2015 at 8:50 AM
To: Austin Holland <austin.holland@ou.edu>
Subject: various

Hi Austin,
I read the article saying you are 'probably' going to USGS. You will be missed, but I offer my well wishes for the change! Quick question, for which there may not be a good answer. Is there a minimum magnitude for felt earthquakes in Oklahoma, does it vary by location such as on the Nemaha ridge or not? What will your leaving do to the grant project?
Thanks,
Nancy
Nancy S. Dorsey
Environmental Scientist
Oklahoma Class II Program Manager
WQ-SG EPA Region 6

1445 Ross Ave. #1200
Dallas, TX 75202-2733
214-665-2294
FAX 214-665-2191

Dorsey, Nancy

From: Dorsey, Nancy
Sent: Monday, July 06, 2015 2:04 PM
To: Hildebrandt, Kurt
Cc: Dellinger, Philip
Subject: RE: HypoDD relocations

Hm, I actually have more data than you do from my OCC connections. I would hate to rock the boat.

You might off that if they provide the volumes and well locations, I will include it in my maps that I am doing for OCC. Phil offered my assistance to OCC, so it's a state led deal. But perhaps, I should get OCC permission to share first!

From: Hildebrandt, Kurt
Sent: Monday, July 06, 2015 1:53 PM
To: Dorsey, Nancy
Subject: RE: HypoDD relocations

Yeah, sorry to have brought that to your attention. Given how quickly Brian sends this stuff out, I thought you would have known by now. Found the note in that article that others declined reassignment to be interesting.

As for the locations and volumes, at this point all a have is the well information for "high volume" Arbuckle disposal wells that were covered under the KCC order (see attached at end) and total volumes of fluid disposal by county(also in the attached file). They've been pretty tight about releasing the actual well by well volumes but I can ask and see if they would be willing to provide us with that information.

From: Dorsey, Nancy
Sent: Monday, July 06, 2015 1:40 PM
To: Hildebrandt, Kurt
Subject: RE: HypoDD relocations

Ouch! I guess it depends on whoever takes his place!

By the way, if you have locations for the Arbuckle disposal wells in the seismically active counties and volumes for 2013 and 2014 I will add them to my maps. If you ask nicely of course. 😊

Dorsey, Nancy

From: Dorsey, Nancy
Sent: Monday, July 06, 2015 1:40 PM
To: Hildebrandt, Kurt
Subject: RE: HypoDD relocations
Attachments: EQ_Vol_TR_Level_Woodward_KS.jpg; EQ_Vol_TR_Woodward_KS.jpg;
EQ_Vol_Trends_Alf_Grant_KS.jpg

Ouch! I guess it depends on whoever takes his place!

By the way, if you have locations for the Arbuckle disposal wells in the seismically active counties and volumes for 2013 and 2014 I will add them to my maps. If you ask nicely of course. 😊

Dorsey, Nancy

From: Dorsey, Nancy
Sent: Thursday, July 02, 2015 8:31 AM
To: 'Suzi Doyal'
Subject: RE: H Voise daily

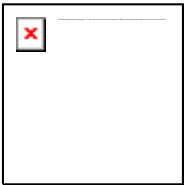
Sounds far better to have them take the time to make it right, but a bit concerning that it is by formula from a gauge readout.

From: Suzi Doyal [mailto:S.Doyal@occeemail.com]
Sent: Wednesday, July 01, 2015 3:33 PM
To: Lacy, Heather; Dorsey, Nancy
Cc: Baker, Brenda; Charles Lord
Subject: RE: H Voise daily

Heather,

As far as I am concerned, I agree and yes it is ok.

Suzi Doyal
Volume Reporting
Underground Injection Control
Oklahoma Corporation Commission
P.O. Box 52000
Oklahoma City, OK 73152
405-521-2278



From: Lacy, Heather [mailto:Heather.Lacy@dvn.com]
Sent: Wednesday, July 01, 2015 3:29 PM
To: Dorsey, Nancy
Cc: Suzi Doyal; Baker, Brenda; Charles Lord
Subject: RE: H Voise daily

We have found a bust in a formula on some of our data going back to April. (some pressures are showing much higher than reality) I would prefer to not send incorrect data today but it might be Monday before we are able to send the correct data. Will that be a problem?

Thanks,
Heather

From: Dorsey, Nancy [<mailto:Dorsey.Nancy@epa.gov>]
Sent: Friday, June 26, 2015 12:09 PM
To: Lacy, Heather
Cc: Suzi Doyal; Baker, Brenda; Charles Lord
Subject: RE: H Voise daily

Thank you!

From: Lacy, Heather [<mailto:Heather.Lacy@dnv.com>]
Sent: Friday, June 26, 2015 10:35 AM
To: Dorsey, Nancy
Cc: Suzi Doyal; Baker, Brenda; Charles Lord
Subject: RE: H Voise daily

It has been injecting and was listed the on the excel spreadsheets until they were switched. We had not gone through to make sure all of our wells were switched over but will do so now.

Thanks,
Heather

From: Dorsey, Nancy [<mailto:Dorsey.Nancy@epa.gov>]
Sent: Thursday, June 25, 2015 4:55 PM
To: Lacy, Heather
Cc: Suzi Doyal; Baker, Brenda; Charles Lord
Subject: H Voise daily

Has the H Voise 14-21N-1E really not been used since 4/20/15?

Nancy S. Dorsey
Environmental Scientist
Oklahoma Class II Program Manager
WQ-SG EPA Region 6
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FAX 214-665-2191

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